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Dr. O. P. Gautam, Director-General, Indian Council of Agricultural Research, delivering the Convocation Address at the University of Agricultural Sciences, Bangalore.

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Editor : ANJNI KUMAR

Olympics in the Political Mist

G. S. Sivia*

The glorious and rich tradition-ridden Olympics have once again been caught up in a rough weather. A high level political drama is jeopardising the fate of its programmes in Moscow. An introspection into the genesis of the Olympic Movement shows beyond doubt that it is a symbol of love, affection, fraternity and brotherhood. Achievements in these Games are pursuits of spiritual satisfaction, happiness, glory, beauty and strength. The ancient Greeks not only cherished these ideals but also worshipped them in reality during the celebrations of the Olympiads. Even though, celebration of the Olympic Games at a periodicity of four years began from 776 B.C. its origin is traced much earlier. The Ancient Olympiads were held uninterruptedly till 394 A.D. at Olympia as a National Festival of gay and glory in honour of the Supreme God 'Zeus'. Involvement in the Olympic Games, therefore, besides being a source of recreative pursuits is also a symbol of spiritual values the only hope of mankind, today, amidst the crazy race of acquiring supremacy in the most sophisticated atomic devices and the lethal weapons. In fact, the pre-historic sports festivals were more spiritual than competitive in essence.

Political Interference

Despite the content of the Olympic schedules is purely of a cultural nature, the dragon of politics has all along been irksome to its smooth and steady progress. It was only through a political decree of the Romans that the ancient Olympics had been abandoned in 394 A.D. Whatever little was left, it was restricted to participation only of the slaves and the animals. The joyful and the healthy competitions amongst the talented athletes were now reduced to fights between the slaves and the animals. This concept of sports of the Roman Rulers brought the Olympic Games to shakles. The Modern Olympics continues to be a victim of political devils. The very first Modern Olympics suffered a political jolt in 1896 at its ancient home town when the Greek Government was reluctant to render the necessary financial assistance. The political situations during the two World Wars had almost swallowed the movement. The result was that the Olympic Games due in 1916, 1940 and 1944 were cancelled. Hitler went to the extent of attempting to use the Berlin Olympics (1936) as an instrument of Nazism. The apartheid question of Rhodesia and South Africa need no details of their adverse effects. The sad events at Melbourne (1956), Mexico (1968), Munich (1972) and Montreal (1976) are too recent to be erased from the memory. The Melbourne situation was almost parallel to what the Moscow Olympic Games are facing today. The Soviet Military intervention in Hungry coupled with the Anglo-French attack on the Swez led to boycotting the Games by several countries. Killing of eleven members of the Israeli Contingent by a group of extremist Palestinias terrified the Games Village at Munich. The atmosphere at Montreal was polluted with a walk-out by African Contingents on the issue of New Zealand's sporting links with South Africa.

Revival

After a gap of fifteen centuries, the French noble, Baron Pierre de Coubertin, breathed a meaningful idea and made ceaseless efforts to revive the Olympics and fill-up the void. With his

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The Management Crisis in Education

D. S. Devanesan

Traditional educational management has been dominated by two types of academic administrators. First, there is the benevolent and urbane father-figure who still tries to run his institution like one big happy family though the analogy is wearing thin under the strains and stresses of rapid educational growth and expansion. Then there is the unabashed authoritarian, ever ready to quote rules and regulations with which to browbeat recalcitrant staff or students. He is often hated, sometimes respected but seldom loved but parents who cannot control their own offspring tend to regard him highly.

Both types, however, can lead to a species of the personality cult, the former based on an appreciation for humane and "non-interfering" leadership and the latter on the admiration the weak tend to have for the strong and dictatorial. And, therefore, each type in its own way can be an obstacle, unwittingly perhaps to the development of democratic traditions and practices which are becoming more and more essential for the efficient and meaningful functioning of educational institutions.

A new type of leadership is needed which is neither benevolent nor despotic but productive without being too sentimental about human relations and efficient without being ruthless—a leadership interested in evaluating institutions mainly by performance and the successful achievement of educational goals and objectives.

Inadequacy of Trained Staff

Another cause for the malfunctioning of educational institutions is the inadequacy of a supporting staff trained in administration. The inadequacy can be traced both to financial constraints and to the lack of proper recognition of the need for and the importance of the administrative staff for the proper functioning and management of educational institutions. There is often an unfortunate and artificial distinction made between the academic and administrative personnel when both are equally necessary for the success of the educational enterprise. The description of the administrative personnel, as non-teaching staff" seems to hide a tacit assumption that the academic staff is a superior class within the institution reflected in differing scales of pay and social status. Instead of seeing their roles as complementary often they function as two mutually exclusive and hostile units within the same institution.

Some colleges have been wrecked by conflicts between the Principal and Bursar (where such an administrator exists) and we are all too familiar with the unseemly faction fights in universities where the Registrar and the Finance Officer are at loggerheads or combine to make the Vice-Chancellor ineffective. In other cases an aggressive or politically motivated Vice-Chancellor may himself be responsible for the

unhappy infighting and chaos which paralyse the administration. It illustrates the importance of an administrative staff which is not only good in administration but also academically motivated to assist the processes of teaching, learning and research. There is an obvious need for specialised training for administrators in educational institutions and especially for those seconded to universities from Central Government services.

Large-scale training in Management, if it is to be carried out seriously, requires considerable funds and well-qualified and experienced trainers. Then there is the far-flung geographical spread of education with its vast network of institutions coloured and conditioned by all the diversities that characterise this country so that what is relevant in one region may not be so in another. There are also all the difficulties in communicating and implementing policy decisions and other related matters when there is such a wide diffusion of responsibility for education from the Central Government to village panchayats. The wide range and extent of the operation and the complicated processes involved, including delicate human relations, continues to baffle many who are genuinely committed to educational change and reform.

But assuming that the miracle of change does take place and that Headmasters, Principals and Vice-Chancellors do become "appropriately trained modern managers", what is to be expected of them? As heads of institutions they will still have to provide a highly motivated leadership but now supplemented and enriched by management training and experience. What this involves will have to be gradually understood through the studies of the behavioural scientists till the picture emerges of what makes a good educational manager in the way in which the attributes of a good business executive have been worked out. But we can try to examine some of the functions and roles he may be expected to perform.

The primary task of an efficient manager is to get good results. In the case of an educational manager this does not simply mean good examination results though that is often the sole yardstick applied to him in a poverty stricken and highly competitive society like ours! The manager-educationalist will be trained to obtain the best results through the proper functioning and development of all the human resources within his institution.

Four Major Groups

In any educational institution there are four major groups: the executive and administrative staff, the academic staff (for both teaching and research), the students (who constitute the largest and most important section) and the service staff

or Karamcharis. These major groups are again enmeshed in sub-groups like departments, centres for specialised studies the library and the sports field.

Ideally speaking these groups and sub-groups should function as harmoniously interacting parts in an organic unity, a beautifully integrated geometric design as Plato saw it. It also explains the nostalgia that pervades some educational circles for the traditional and ancient institutions embedded in our culture like the gurukulas and ashramas of the hoary past. With the exception of a few Gandhian institutions and some centres of religious and theological training, the reality of our educational systems is that they are closer to the modern factory than to any attractive old cultural model. The unrest, for example, in educational institutions is now more akin to industrial unrest with wages, service conditions and labour problems driving the academic goals and objectives from the centre to the periphery. With the unionisation of the administrative staff, the teaching staff, the students and the non-teaching staff the management of an educational institution has drawn closer to the style of management needed by industry. And the teaching and examination system resembles the production line in any factory except perhaps, that industrial managers are more concerned about quality control for their marketable commodities than their educational counterparts!

If the success of the manager-educationist is to be judged by results then the predetermined objectives and goals of the institution should be clearly defined. These objectives and priorities, to be successful, should be worked out together by all the groups within the educational institutions through an in-built and continuous system of planning and development. Unless there is such democratic participation by the staff neither functions and roles nor meaningful programmes and activities can be designed.

Management by Objectives

Therefore, the manager-educationist will understand Management by Objectives (MBO) and utilise communication skills for enlisting the understanding, enthusiasm and cooperation of his colleagues as active co-workers (not employees!) in the achievement of the goals which the institution has set for itself. The manager-educationist has to be a living embodiment of the goals and objectives breathing a creative spirit into every sphere of the institution. He should be judged by his performance in terms of the objectives of the institution rather than by subjective reactions to his personality alone which is so often the case.

If performance and results are the criteria by which the head of the educational institution is to be judged, then the same should apply in all fairness to all who are involved in its functioning. If every thought, word and deed of the head is under constant appraisal the same should apply to all members of the staff! A great deal of thought will have to be bestowed upon recruitment and selection procedures so that the initial mistake of appointing

non-starters is avoided. The existing hierarchical structures do not make it possible to provide adequate incentives and rapid promotion on the basis of good performance. Lecturers have to stagnate for years as lecturers with no hope of advancement which is most frustrating. It is a system which is self-defeating because it inhibits merit, initiative and enterprise.

In the ultimate analysis change can come only from within. The bold and logical step is to accept the stark fact that the old "university" model has been practically replaced by a "multiversity" in which the right of the four major groups—the administrative staff, the teaching faculty, the students and the service personnel—to form associations of their own which are now recognised in grudging or inadequate legalistic terms should be accepted as a necessary step towards academic change and reform.

Once this right of "unionisation" has been conceded, the functions of the Management will be clearer as the coordinating agency which motivates and inspires all the units to make a planned and concerted effort to fulfil the educational goals and objectives of the institution. These associations will then be regarded as allies in the struggle for radical reform of the educational system rather than as opponents of the Management or obstacles to progress. Such a mutually friendly approach may also help the associations to see that short term objectives like improved service conditions, for example *cannot replace the long term objectives of sound educational reform which requires cooperation rather than confrontation with the institutions to which they belong.*

The manager-educationist will not only maintain friendly relations with each of these four associations but also help them to build healthy traditions and activities. It is not axiomatic that any of these four associations will function in a democratic or constructive manner. They are as much in need of proper management and organization as the institution itself. Where teacher, student, or karamchari associations are undemocratic, badly led and mismanaged they also contribute to the malaise of Indian education.

Basic Interest

Therefore, the Management has a basic interest in helping them to function properly even providing their leadership with opportunity for training and understanding for their role and that of their association as a means towards the efficient performance of functions contributing to the total welfare of the educational institution to which they belong. Such an understanding of the role of those associations should challenge them to think carefully and responsibly about both their rights and duties.

Teachers militants and radicals, for example, will be faced by the need to define their goals and objectives not just in terms of their own career and service interests (important though they are) but also in terms of what their priorities are for reforming and changing the entire educational system. Teacher

association will carry more weight with the general public if they can adopt a holistic approach in which their keenness for educational reform includes and yet transcends their own personal stake and vested interest in the system. Only such a detached and objective stance will give credibility to the campaign of teacher associations against mismanagement and corruption.

Further, the economic problems of teachers cannot be divorced from the wider pressing problems of poverty and injustice and their struggle cannot be isolated from the major battle for a better life for the whole people. While the right of organised protest cannot be denied to teacher associations they do have a special responsibility for trying to avoid methods of confrontation which are likely to create the wrong impression on the young minds entrusted to their care. And it is not simply a negative feeling born from fear of the indiscipline that might result but a concern for what is ultimately good for the entire academic community as the guardian of the culture and civilization of the people.

Another aspect of this "unionisation" trend is the extension of the activities of these associations outside the college walls and university campuses through their affiliation to regional, national (or even international) bodies. In many countries teacher and student associations function on a national scale. The constructive aspect of such developments is that these associations could rise above local and regional considerations by being exposed to thinking on a national scale about the total educational needs of the country.

Olympics in the Political Mist

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enthusiasm and devoted efforts, the dream came true in 1896. He had a conviction that participation in the International Sports Festivals of this kind would uphold its legendary traditions and project the human race above all considerations of caste, creed, religion and territorial barriers. Coubertin's ideals have, no doubt, become a reality and, since its revival in 1896, the Olympics have been regularly held at a frequency of four years except during the first and second World Wars. Yet, the political mist has always been surrounding the Olympic horizon.

Fate at Moscow :

The next Olympics at Moscow are again on the threshold of a political dissection. Perhaps the history has taken a direction to repeat itself. The world is sharply divided over Soviet military action in Afghanistan. Never perhaps in the history of the Modern Olympic Movement, world leaders of the stature of Jimmy Carter and Mrs Thatcher joined the issue so seriously. Following a call by Carter Administration for a parallel programme, a chain reaction of a cross-section of views has set in amongst the Western European Governments. One group including Britain, New Zealand and Portugal argues strongly for a boycott. The other group, however, representing Switzerland, Sweden and Luxembourg is opposed to mixing politics with sports. The third group of countries like West

Intrusion of Party Politics

The danger, however, is that their autonomy as academic associations may be eroded by the intrusion of party politics. The fragmentation of the labour movement through the control of trade unions by political parties may be cited as a parallel. But it has been argued that trade unions have no option but to turn to political parties for support when they fail to obtain redress from managements and governments.

Similar arguments will undoubtedly be used to justify teacher and student involvement in party politics. But such abdication to party control can have far-reaching consequences, destructive of the basic purpose and aim of academic bodies which is a matter for the leadership to ponder over. While political action may sometimes be necessary and inevitable, can the associations function in such a manner that they do not become the tools of unscrupulous politicians or reduce themselves to ashes by allowing themselves to be caught in the cross-fire between political parties?

The poignant question is : Who is shaping India's destiny in her class rooms? Are there enough dedicated men and women in the classrooms with the will, the ability and the managerial skills to shape our educational systems in such a way as to make them contribute to the removal of all that hinders the progress of our country as it struggles to fulfil the trust it made with destiny more than three decades ago? Those who are responsible for shaping our national destiny must have that vision without which the people perish. But the agonising question is : Do they? [Courtesy : *The Hindu*]

Germany and France feels that it was too early to come to a final decision. The Arabian Countries have also supported the move for a boycott. Jimmy Carter's call is gaining momentum. On the other hand, the Soviet group is on the defensive and is condemning the boycott move as an irrelevant issue. The situation is really in a boiling pot and what may emerge ultimately is yet a speculation.

Conclusion

Political interference is nothing new to the Olympic Movement though its style and colour has been varying from the concept of social structure as in the ancient Greeks to severe differences of political ideologies as it is today. In this age, to imagine an important International Event like the Olympic Games absolutely devoid of political considerations when the Life is so closely interwoven into its various political, social, economic and religious aspects is only an abstract thinking like Plato's hypothesis of a Philosopher King; what is important, however, is that the political forces do not overtake the impact and the importance of the Olympic ideals. Sports lovers have unshakable faith and confidence that the sad situation will blow over and world political leaders will re-concile to a situation of mutual understanding at least for the period of Moscow Olympic Games as was done in the ancient Greek, when a truce was signed for the period of the Olympiads. A good lesson to learn! □

Distance Education

Raghunath Safaya*

We are very familiar with the term 'Correspondence Education' as the system has grown in India during the past two decades. The system is absolutely novel system in so far as it is a major shift from the age old plan of formal education. Formal education is consciously and deliberately planned with a particular end in view. But informal education is not pre-planned. It is incidental. Another type of education is non-formal education which is imparted in a planned manner but not under existing conditions. Candidates desirous of learning but who on account of circumstances cannot join Institutions on regular basis, need some facilities where-by they can study, appear at the examinations and get the degrees. Such candidates are usually far from the Centres of learning. They may be in the villages, interior areas with scarce means of Communications and transport or they may not be able to come to the Educational Institutions because of their personal circumstances. Since such education is imparted through mail from a distant place, an educational institution far away from the candidate, this type of education is also called Distance Education, Distance Education can include all types of courses for the benefit of the candidates.

2. The courses are a boon to those students or earning adults who are unable to join regular courses in educational institutions. Through the courses, the correspondence student is free to arrange his study hours according to his own convenient and personal comfort. He saves time and energy by studying at home and by losing nothing, in comparison to, as he would gain from formal education. To my mind, the Methodology of Teaching, which has been adopted for Correspondence Courses which includes correspondence lessons, regular assignments, periodical assessment, contact programmes and study at Library Centres, is highly thorough and practicable so that I would recommend even the students of the colleges to attend the correspondence courses and get the added benefit.

3. The correspondence courses are growing in popularity. This is because of the recent socio-economic and technological changes that have taken place in all the countries of the world. Educational experts have come to the conclusion that the present formal education provided in the formal Institutions like schools and colleges, is out of date. The existing educational system which were developed centuries ago cannot be adopted to the new needs and circumstances. The circumstances had widely changed during the past few decades. For example the school age population is increasing at a fast rate which is 20% faster than the rate of increase of world population. Every year two million more children are refused the right to education. At this rate in 1980 the number of children of the age group 6 to 14 not

attending schools total two hundred and 30 million. At for the adult illiterates, the number will be eight hundred 20 million. Again the world is spending about two hundred million dollars annually on education. Even than not to speak of underdeveloped countries, even the developed countries are not keeping pace with the budgetary and financial requirements for providing education to all. It is impossible to keep pace with the requirements (financial and human) of providing education to the entire societies by means of the formal procedures in the schools or colleges which are set up for imparting education.

4. There is another fact pointed out by world experts on education which needs immediate attention. Recently, political changes have taken place in most of the countries of the world. With the advent of democracy in these countries, social structures are changing and there is need of re-modelling the educational structures so that :

- (i) each under-privileged class gets the opportunities of the best education ;
- (ii) the difference between the higher social status and lower status is minimized especially through providing equal educational opportunities to all;
- (iii) the working class in various administrative, commercial and technical organisations must get educational opportunities in their own fields, for their future progress;
- (iv) the economically, impoverished class who could not get college education because of low financial resources, should get the opportunities of higher education;
- (v) the adult educated class who are in service should not remain stagnated but should get chances of increasing their qualifications;
- (vi) the adult educated class in the particular branch of learning must no isolate from other branches of learning.

5. In 1972, the International Commission on the development of education set up by UNESCO published their report entitled 'LEARNING TO BE'. The members of the Commission have suggested revolutionary changes in the concept and technology of education. The Commission rejects the idea of providing education only during a fixed period, says-ages 6 to 20, but maintains that real education is a life-long actively and every individual must get opportunity to keep learning through his life. As such the present schools and colleges providing formal education to a particular age group are an anachronism. They can hardly cope with the need of continuation education for each adult through his life. The Commission recommends that education should be dispensed and acquired through a multi agency. All agencies and all modes of technology must combine to provide life-long education to the knowledge-hungry learners.

6. When we take into consideration the above facts regarding the socio-economic changes in the world societies and changes in the educational concept and technology, we come to know that self-

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Research Imperatives of Agricultural Advance in the 1980s

Fifteen years ago, we set our goals to make the country self-sufficient in food. In 1978-79, India achieved a record production of 131.4 million tonnes of foodgrains compared to 45.0 million tonnes in 1947. Today, we are self-sufficient in food. This three time improvement in foodgrains production within a period of 30 years has been possible due to new production technology developed by Research Institutes and Agricultural Universities and adopted by our farmers. Main ingredients of the technology are: (a) extension of irrigation facilities, (b) high-yielding varieties, (c) increased use of fertilisers and (d) adoption of improved agronomic practices.

The major contribution to food production came from

production substantially with available technology.

Research advances made in the areas of dryland agriculture, salinity control, milk production, disease control, poultry production, and fish culture have started having their impact on production and productivity introducing at the same time an element of diversification and stability into our agriculture. Lactation milk yield of a cross-bred cow is about four times that of a *desi* Cow. Improved strains of poultry now available give 260 eggs a year compared to the present average of 50-60 eggs and a fisherman can grow 3000-4000 kg fish per hectare under composite fish culture where he grew only 600 kg hitherto. Doubling of production at least on a part of dry farming area is an achievable

are now possible in many cases. The average yield of wheat in Uttar Pradesh for example is 14 quintals per hectare as against the demonstrated potential of 60-70 quintals per hectare. We must critically examine the steps which we must take to realise this untapped yield potential.

If there is one lesson that we can learn from our experience during the past 15 years, it is that no major progress in agricultural production is possible without the availability of a sound technology. Fortunately, this is one area where the country has laid down sound foundations for continued progress in the years to come. India today has one of the largest physical infrastructures both in agricultural education and research in the world. The country has 35 Central Research Institutes and Project Directorates and 21 Agricultural Universities covering almost all the States. Even more important are the All India Coordinated Research Projects of the ICAR which are run in mutual partnership by the Research Institutes and Agricultural Universities. Having laid down this strong institutional base and a national grid for research, the emphasis in the years to come would naturally be on a qualitative improvement and on increasing the research output per scientist. We must remind ourselves that progress of agriculture can be sustained only with a dynamic research and training base. Without this base success would be shortlived.

One greatest concern at the moment is the transfer of technology that has already been generated and the wide gap that exists between actual and potential farm yields. It would appear that the gap is more on extension-cum-management-cum-public policy gap rather than a technology gap. A critical socio-economic analysis only could identify the relative role of different constraints for each situation. This then is one priority area for research where collaboration with social scientists would have high pay off.

Next to High Yielding Varie-

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wheat and rice. Wheat production trebled over past 15 years. Rice production has started moving up despite problems of pest incidence and water management. Similar production advances have been registered in the case of cotton and potato. We have yet to make a significant progress in the production of pulses and oilseeds which are mainly grown in dry farming areas under precarious soil moisture conditions and without much fertiliser application. Non-availability of quality seed, inadequate plant protection and lack of adequate price support have been the principal constraints. Also compared to elite cereals, these crops have been relegated to sub-marginal lands. However, even in the case of pulses and oilseeds there are real possibilities of increasing

goal.

In spite of availability of adequate foodgrains in the country there is a great deal of malnutrition particularly among the poor who do not have purchasing power due to unemployment/under employment. Hitherto, a production problem has now become a problem of equity and distribution.

Another important factor which we must take into consideration is that although food production has made significant progress, average yields on a national basis continue to be relatively low. It is generally agreed that only a small part of technology available (15-20 per cent) is finding application on farmers' fields and our farmers are generally harvesting only one-third or one-fourth of the crop yields which

ties, irrigation has been a major contributor towards production. Irrigation is essential both for increasing and stabilising yields. Emphasis is, therefore, being given to bring maximum area under irrigation, 15 million hectares by 1983. The aim is to fully utilise the ultimate potential of 113.5 million hectares by the year 2000. But even after realising the full irrigation potential, about 55 per cent of the cropped area would remain rainfed. Hence the continued importance of dry-land agriculture.

Today, about 70 per cent of cropped area is rainfed which contributes 50 per cent oilseeds and pulses and about 45 per cent of cereals. Over 100 million hectares of the dry farming areas, mean annual potential evapotranspiration exceeds the mean annual rainfall and these semi-arid areas suffer chronically from drought, soil erosion and wide fluctuations in production. Therefore, unless we optimise production under dry farming conditions our goal of stability may not be achieved. It is in this context that the dryland agriculture project was started about ten years ago. Since then appropriate technologies for stabilising crop production have been developed such as water harvesting for life saving irrigation, watershed management, moisture conservation, formulation of contingency cropping plans for drought prone areas and compensatory planning for non-traditional seasons. Adoption rate of technology in dry farming areas is even slower. Although doubling of yield is a distinct possibility, element of uncertainty and high risk serve as disincentives and farmers are, therefore, shy to adopt improved package of practices. They need low cost technologies. Although dryland agriculture is at the threshold of a major revolution, only imaginative look at research strategies would seem to hold the key to the future improvements. Researchers will have to carry out water-balance studies, develop crop genotypes especially suited to inter-cropping systems so as to

benefit from allopathic effects of associate crops. Also, the plant physiology and agro-meteorological base of dry farming needs to be strengthened a great deal.

Fertiliser is another important production factor. Its use has gone up to 5.12 million tonnes in terms of integrated nutrients in 1978-79, while hardly any chemical fertiliser was used in 1947-48. Our aim is to reach the target of 7.8 million tonnes by 1983. In spite of this phenomenal progress, the per hectare consumption in India is still only 30 kg as against 428 kg in Japan and 730 kg in Netherlands. Our dependence on fertiliser imports may continue for many years despite an enormous investment in creating indigenous capacity. The escalation in the international prices of fertilisers and their difficult availability have been a serious problem to our agricultural growth. Our strategy, therefore, is to enhance efficiency of applied fertilisers and step up the use of biofertilisers by developing as part of an integrated nutrient supply systems. More extensive use of legumes and green manures in cropping systems and of blue green algae and Azolla in rice culture should form an important part of the strategy.

On the one hand, our agriculture is getting more and more energy dependent with increasing use of fertilisers, irrigation, pesticides, etc., on the other, the energy supplies are getting reduced and energy costs are going up. We also need energy for crop drying, food processing, transport and storage. In the wake of energy shortage we are trying to tap solar and wind energy as well as biogas resources. Animal energy also need to be nurtured and used effectively for irrigation, transport and other purposes. We should also launch programmes for harnessing both renewable sources of energy and nutrients for on-farm use. Our present production technology makes it possible to produce about 20 tonnes per hectare of biomass which is reported to be equivalent to 48 barrels of

oil. If so, our total requirements for oil 20 million tonnes, can be met from 1.25 million hectares of irrigated land annually. This may be too optimistic an estimate but sugarcane in South India with 80-100 tonnes per hectare yield can be a promising source of energy. In any case fossil energy conservation requires priority attention. Biological nitrogen fixation would be an important alternative to replace chemical nitrogen.

The annual field losses from pests (insects, diseases, weeds, rodents and nematodes) are truly enormous. All major crops suffer losses before harvest and after harvest. Apart from resistant varieties, one of the growing needs of the day is "real time management of agricultural systems" and institution of effective 'integrated pest management' and 'pest surveillance' services. There has to be more than single line of defence, resistant varieties improved management, biological control, carefully timed application of chemical—all in concert.

There is need for a mechanisation system for producing more food and at the same time put more people to work and more effectively. Mechanisation should lead to more man hours per unit area per year, more work days and more uniform distribution of work over the year. There is need for selective mechanisation to enhance yields and to minimise losses.

While the need for forging and introducing new technologies for increasing yield is urgent, the process of man-made damage to agricultural assets which is proceeding unabated has to be stopped. We must realise that the prerequisite to sustainable development is conservation of natural resources, both living and non-living. Conservation should benefit the present generation while maintaining potential to meet the needs of future generations. Patterns for development should, therefore, aim at conservation of resources.

The ecological system in India is currently under great stress due to growing pressure of human and livestock population. For-

ests are being denuded, marginal lands are being cultivated, grasslands are being overgrazed. There is soil erosion in the uplands and sedimentation and flood downstream. Desertification is on the increase and the renewable resources are getting depleted. The very resource base of production is under threat. The challenge is to make ecological resource more productive and less hazardous.

Land is a basic and inelastic source and it takes nature about 300 years to form one cm of top soil but 6000 million tonnes of soil is being eroded every year, and with it are carried away 8.4 million tonnes of nutrients, which is more than what we are using at present. About 150 million hectares of the land area is subjected to water/wind erosion. About 25 million hectares suffer from waterlogging (3 million hectares); salinity (4.5 million hectares); alkalinity (2.5 million hectares); ravines (4 million hectares) and shifting cultivation (3 million hectares). About 20 million hectares are affected by floods. Inflow of sediments into reservoirs is over 200 per cent more than the planned inflow. Hence the urgent need for soil conservation and reclamation.

Water is the key resource for future development of our agriculture, but efficiency of applied irrigation is only 30 per cent in India at present as compared to 80 per cent in Israel. About 30 per cent of the irrigation water is lost through conveyance channels before it reaches the fields. We must, therefore, minimise the waste and optimise the management of available water resources.

India is endowed with immense diversity of *fauna and flora*. This has been an invaluable source of genetic variability for our breeding programmes. It was to conserve these resources that the National Bureau of Plant Genetic Resources was established to carry out exploration, collection and utilisation of plant genetic resources. Similar Bureaus are to be established for collection and preserving animal and fish germplasm resources. One of

the important tasks of NBPGR would be to introduce and promote the culture of underutilised plants such as winged beans, guayule, jojoba and Euphorbia.

It would not be possible for me in an address like this to deal comprehensively with the subject I shall however, try to recount some of the major trends.

Emphasis is changing from single crop research to "cropping systems" and to "farming systems" research. Accordingly, mixed farming systems with varying combinations of crop-livestock-fish components are emerging. Multi-level farming around plantation crops and poly-culture in fish farming are likely to be the subjects of more intensive research in future. While thrust on problems of irrigated agriculture continues, dryland agriculture is emerging as a challenging sector. With enhanced use of irrigation, fertilisers, high plant populations, and increased cropping intensities, problems of water management, pest management, crop nutrition and pesticide residue analysis are becoming more and more complex.

Appreciating the need for conservation of natural resources, research efforts are being increasingly focussed on soil-water-plant conservation and watershed management. Crop planning in relation to eco-system and scientific land use planning have been weak links hitherto, and need a fillip. Agro-forestry and desertification are emerging as new areas of vital importance for research. Energy plantations and biomass production systems likewise are becoming more important in the context of energy shortage.

With milk and poultry production emerging as important components of mixed farming systems feed and forage research including development of sylvi-pastoral systems will have to receive more attention. The focus is thus changing from production factor research to resource conservation research including energy conservation and conservation of post harvest food losses both in quantitative and qualitative terms. The more we

strive to achieve stability in production in the face of aberrant weather as well as pest incidence, the more we feel the need for strengthening agro-meteorological research. We also need to enhance the socio-economic content of our research programme to find solutions to the problems of transfer of technology. Also we need to do a great deal more of mission-oriented basic research in order to overcome the "plateauing effect" in crop yields. It is obvious that applied research alone may not be able to resolve the constraints.

Questions are often raised about the comparatively lower yield potentials of pulses and oilseeds compared to cereals. Pulses and oilseeds are energy-rich crops, while 1 gm of glucose manufactured through photosynthesis could produce 0.83 gms. of starch, it would produce only 0.40 gms proteins and 0.32 gm. of lipids. On energy considerations, therefore, there is a calorie penalty in the case of pulses and oilseeds and one should not theoretically expect at this stage the same order of yield potentials as met with in cereals. It is also clear that another quantum jump in cereal yields is not in the wings. Further yield increase would depend on level of soil and water management and plant protection. A breakthrough in level of crop husbandry is an imperative to major agricultural advance.

Further, our emphasis in research is shifting more and more to problems of small farmers—how to diversify his cropping, his income sources, his production capabilities and thus to enable him to share the benefits of development.

Crops account for major part of our food supply. They are also a cheap source of renewable industrial raw materials. Therefore, researchers on biological processes such as photosynthesis, biological nitrogen fixation and cellular approaches to plant breeding that control and limit productivity are particularly crucial and relevant to crop improvement. Improved efficiency of photosynthesis holds key to the future adequacy of our food

supplies. Green plants are primary harvesters of free solar energy. They are biological sun traps. They are net producers of food and energy on a renewable basis. Therefore, all farm practices must aim at increased appropriation of solar energy in the plant system. Agriculture is basically a solar energy processing machine, yet few studies of photosynthesis have focussed on crop productivity and biomass production. The whole intent in agriculture is to collect and store solar energy as a renewable source of food, feed and fibre in plant and animal products and to do it with utmost efficiency. This efficiency is only less than 2 per cent in the major food crops. For most crops solar energy utilisation does not exceed 1 per cent. The aim in photosynthetic studies would normally be to identify and control mechanisms that are responsible for redistribution of photosynthates in order to maximise harvest-index.

Both the efficiency of solar energy utilisation and conversion of cultural energy into food energy would determine the efficiency and cost benefit ratio of a farming system. Hitherto, farm systems were assessed on the basis of their productivity and profitability. Energy needs of agriculture received only scanty attention. In the wake of high cost and acute shortage of non-renewable resources it is necessary to pay more attention to energy balance. Development of varieties with greater efficiency for conversion of cultural energy into food energy and biological nitrogen fixation through legumes are the kind of mechanisms which would help save non-renewable forms of energy. Although the energy balance is quite favourable in India at present compared to other countries, there is need to develop technology where improvement in productivity is not simultaneously accompanied by a heavy loss in the efficiency of energy conversion.

Chemically fixed nitrogen is a non-renewable resource. It is also the most costly and fossil energy dependent industrial input into agricultural producti-

vity. About 30 per cent of total production capacity of crops is now credited to this single input. Almost one-third of all fossil energy now used in agricultural production goes to chemical nitrogen fixation synthesis. It is inconceivable for us to use non-renewable resources indefinitely. The alternative is to enhance biological nitrogen fixation. We should increasingly adopt cropping system with legume as a component and work for genetic improvement of both host-plant and micro-organisms. Research efforts should be stepped up to improve the biological nitrogen fixation associations with grasses, cereal grains and other non-legumes. Biologically fixed nitrogen is slow release nitrogen and, therefore, losses from nitrification/denitrification which now approximate over 50 per cent of fertiliser nitrogen could be reduced to half.

Conventional selection and hybridisation techniques have given us super strains of rice, wheat, maize, sorghum and many fruit and vegetable crops. Combining high productivity, high nutrition quality and disease resistance would remain the continuing challenge to the plant breeders. Development of salinity resistant in plants would indicate that genetically controlled plant nutrition will surely play an increasingly important role in the future crop production. Cell culture and protoplast fusion could become a major tool for making distant crosses to synthesise new species/genotypes.

Resistance breeding is still the area of high priority. This would include poly resistance to diseases and pests, cold and drought resistance and even resistance to toxicity of certain micro-nutrients. With the different cropping systems coming into vogue there would be need to evolve varieties suited to high density monoculture, inter-cropping and three dimensional crop canopies. Varieties with crop canopies that provide maximum interception of light, which make the maximum use of CO_2 and which have a pattern of root development to enable extraction of

nutrients and moisture from different depths would be required, if agricultural production is to be increased through intensive cropping techniques. A small farmer would need, in addition, to hybrids, easy-to-grow synthetic and composite varieties. The newer varieties may have to possess an optimal blend of vertical and horizontal resistance to the important pests and diseases. Multi-lines would be needed to create genetic and inter regional barriers against epidemics.

Only 25-35 per cent of applied nitrogen is actually utilised by the plant. Balance is lost through de-nitrification or leaching. Crop productivity could be greatly improved if this enormous loss could be even partially reduced. There is, thus, need to strengthen research aimed at better utilisation of applied nitrogen and reduction of nitrogen losses.

An important aspect of future research would relate the fertilizer use efficiency on the one hand and biological fixation of nitrogen through *Rhizobia*, *Blue green algae*, *Azolla* and *Spirillum*. In order to reduce losses of applied nitrogen through leaching in light soils, because of de-nitrification of nitrates in submerged soils and through volatilisation of surface applied urea, techniques of using nitrification retardants and slow release fertilisers will have to be developed using indigenous material such as neemcake.

Search has to be on for super symbionts in *Rhizobia* with properties of high infectivity, wide host range, capability to fix nitrogen regardless of nitrogen constraints and efficient ammonia delivery system to the host.

One of the most prospective areas for future research particularly in the area of horticulture would be to study the hormonal mechanisms in relation to plant development. Use of chemical ripeners in sugarcane, of ethrel to improve flow of latex from rubber trees would illustrate that physiological manipulation of plant processes through hormonal treatments is becoming in-

creasingly a distinct possibility.

In the area of animal sciences more efficient utilisation of feeds and forages, increased fertility, disease control and genetic improvement would still remain the areas of major interest. In order to increase the calving efficiency of cattle and buffaloes, studies on oestrous synchronization, control of reproductive cycle, semen preservation, pregnancy detection, super ovulation with hormonal treatment are receiving greater and greater attention. In breeding the objective could be development of superior animals for low quality diet. The increased use of non-protein nitrogen (urea) and conversion by ruminants would continue to be an important area of research. Likewise, as marginal and range lands receive more and more attention, research on forage production and carrying capacity of range lands would gain importance. Extensive use of treated cellulosic material as cattle feed could open up new vistas.

New high pay-off agricultural technologies for the future will not only be those which result in increased production and high yields but also those which are sparing of resources. They would be the ones which would increase demand for under-utilised labour resources and provide more work days per year and more productivity.

Considering that there has been a tendency for 'plateauing of yields' of major food crops since 1970, there would be need to step up mission-oriented basic research relating to biological processes that control and limit productivity. Investment in agricultural research which is very low at the moment will have to be increased substantially. Agriculture advances in future would require in addition to new technologies, massive resource inputs, economic incentives and favourable public policies.

Technologies per-se may be scale neutral but then adoption in practice may vary widely from one farm situation to another. Yield stability, low risk-bearing capacity, low cost and profit

maximization are some of the characteristics that we should keep in view while developing appropriate technologies for our small farmers. Under small farm situation, we need to develop technologies which would be suited to group action. Operation Flood II, a cooperative movement aims to improve the income and living of 10 million farming families. We should plan to have similar programmes in the field of aquaculture and watershed management.

Above all, there is need to put available technology to actual use. The time between a discovery of the technology and its adoption must be minimised. Collaboration between basic science workers, applied science workers and communication experts and social scientists would be almost inescapable in future. We need to make greater investment not only in research but for diffusion of knowledge also. The future viability of our agricultural development will depend on how the results of research relate to the production problem of 1980s and the decades beyond.

In the last two decades, significant yield gains were achieved through introduction of high yielding varieties and fertilisers. As we look to the decade ahead, more research would be needed on development of efficient water control and water use system both on irrigated and dry farming areas; plant protection, ways to avoid food losses after harvest and sociological aspects of tech-

nology. It seems that to maintain output growth in the decade ahead is going to be more difficult and more costly than in the past decade. This calls for a renewed determination on the part of our scientists and the Government to tackle the problem more resolutely.

[Excerpts from the Convocation Address delivered by Dr. O.P. Gautam, Director-General, ICAR, at the University of Agricultural Sciences, Bangalore].

Personal

1. Prof. G.S. Marwaha, Director, Indian School of Mines, Dhanbad, has been elected all-India President of the Mining Geological and Metallurgical Institute of India.
2. Dr. Ramavtar Shukla has taken over as the Vice-Chancellor of Patna University.
3. Dr J.C. Kundra has been appointed Vice-Chancellor of Magadh University.
4. Mr. S.K. Chaturvedi has been appointed Vice-Chancellor of Bhagalpur University.
5. Mr. Bhaskar Banerjee has been appointed Vice-Chancellor of Mithila University.
6. Dr. K.S. Singh has been appointed Vice-Chancellor of Ranchi University.

Association of Indian Universities

D.D. Upadhyaya Marg, New Delhi-110002

Applications are invited from College/University Teachers for admission to a Basic Level Correspondence Course in EVALUATION METHODOLOGY AND EXAMINATIONS. The duration of the course will be six months (1st July, 1980 to 31st Dec., 1980). The course is likely to be conducted from four Regional Centres (Mysore, Bombay, Shillong and Delhi) and will be coordinated by the Research Cell of the Association. A personal 'Contact Programme' at the centres is also planned.

Requests for prospectus and prescribed application forms, accompanied by a crossed Indian Postal Order for Rs. 5/- drawn in favour of the Association and a self addressed stamped envelope (45 paise) should reach the undersigned. The last date for the receipt of applications in the prescribed form, will be June 15th for non-sponsored and June 30th for sponsored candidates.

Prof. V. Natarajan

Reorganisation of Education and Restructuration of Courses at Jammu University

The canvas of higher education in the University of Jammu is being redesigned in the wake of suggestions and recommendations which have been made, during the last few decades, by the various national and State level committees and those embodied in the Policy Frame and Guidelines for reorganisation of education issued by the University Grants Commission. The State Government has already accepted and launched the New Pattern of Education, viz. 10+2+3.

After thorough deliberation and in consultation with the Boards of Studies and Faculties, the Academic Council of the University of Jammu has recommended introduction of the First degree Pass Programme of the

relationship between the academic component and the applied component of each subject so that a student could apply his theoretical knowledge to solving the problems of the region as well as those arising out of the fast changing social milieu through field studies and project work. Community service and extension work are proposed to be introduced progressively as a means for making courses and studies relevant to the needs of the society and oriented towards a solution of existing problems. The postgraduate education will be aimed at specialisation and initiation to research.

It is envisaged that to realise the aims of education adequately, to make teaching-learning process more meaning-

blem-solving sessions and home study instructional devices. All this would involve new approach, strategy and content of courses and different examination system as lately vociferated by experts and as endorsed by the University Grants Commission in the "Examination Reforms: A Plan of Action".

The semester system is proposed to be introduced in the University of Jammu at the post-graduate level with effect from the academic session 1980-81 and at the undergraduate level with effect from the academic session 1981-82, preceded by adequate preparation.

College Development Council— Role of

The reformative and innovative measures to give a dress-up and new look to the panorama of higher education sector were initiated by the College Development Council since its inception in the University in March 1979 under a scheme sponsored by the University Grants Commission to ensure planned and integrated development of colleges and improve standards of collegiate education which cover about 85% of the student population at the University stage. The Council has been working in intimate association with the academic bodies of the University in a searching introspection of the merits, modes and models of the existing plaza of University education and in the endeavour to make pursuit of education in this lyceum purposive, need-based and application-oriented. Such an enterprise needs careful planning, thorough understanding of the concepts and procedures involved and committed participation and involvement of the academics, students, planners and administrators. To this effect the Council has already initiated a number of measures to create greater awareness and understanding of the postulates and the spirit underlying the semesterisation of courses and generate a sense of confidence among the teachers and students about its utility and comparative

CAMPUS NEWS

duration of two academic years after 12 years of school education to provide broad-based education in related disciplines, and Honours Programme of the duration of one academic year after the Pass Programme with emphasis on indepth study in a discipline. The components of the first degree programme will include Foundation Courses in order to generate in every student a greater awareness of man and his environment—social, cultural and natural. There will be a provision of core/elective subjects including application-oriented courses to provide the student with a broad exposure to several disciplines and an opportunity to study some chosen subject or subjects in depth and bring him at this stage to the frontiers of knowledge in his area of study. There will be an organic rela-

ful, relevant and rewarding; to bring about flexibility in the choice of courses (suited to the needs and aspirations of the individuals), to strengthen the standards of courses, to encourage inter-disciplinary studies, to sustain interest and assess students on continuous basis, to promote dynamic instructional techniques and learning modes and ultimately to make end-of-the-course evaluation a pleasant experience, the undergraduate and post-graduate programmes should be restructured in terms of semester system which inhere unit/module based courses, continuous sessional evaluation and improved methodology of teaching. The centre of gravity has to shift from teaching to effective learning, characterised by the achievement of specific objectives through tutorials, seminars, pro-

merit. Discussions on vital issues like teaching-learning strategies and the operational challenges and impediments involved were held in all the academic bodies of the University.

Almost all the departments of study of the University have instituted M. Phil courses. Six departments of the University have been identified by the University Grants Commission to undertake M. Phil and Ph.D. Programmes for college teachers and award Teacher Fellowships to the extent of 10 in each department under the Faculty Improvement Programme. These openings are offered to College teachers for updating their knowledge and improving their professional competence. M. Phil Programme has been designed in such a way that it could be a course-oriented terminal degree or it could be a first research degree leading to entry for Ph.D. degree.

Profiles of all affiliated colleges have been prepared by the Colleges Development Council. Each College is being assisted to engage in institutional planning and have a perspective for development in the light of changes in the educational structure, approach and content contemplated by the State Government and the University bodies. Special teams of senior academics have been constituted to visit each affiliated college in order to discuss with the college faculty their essential needs, infrastructural requirements and development projections. Details of additional physical inputs required by each college as assessed by the special inspection teams will be forwarded to the State Government for allocation of requisite funds, so that the semester system project could be launched from a solid physical base.

The State Government has already provided to the University a sum of Rs 50,000.00 as seed money for initiating preparatory measures for introduction of Honours courses in the colleges.

The College Development Council has been waiting for

guidelines and indication of pattern of financial assistance to be provided by the University Grants Commission to colleges for development during the Sixth Plan period. Development schemes of the colleges will be formulated and finalized in the context of the UGC guidelines when received. In the meantime the pace of development of colleges has receded for want of financial support from the Commission for development projects.

Seminars/Workshops/Conferences

A seminar on "Semester System: Rationale, Mechanics and Implications" was held in the University on 11 and 12 February 1980. It was inaugurated by the Governor of the State who is the Chancellor of the University. More than 100 Faculty members of the University departments and affiliated colleges participated in the discussions. Resource persons from Jawaharlal Nehru University and the Universities of Rajasthan, Meerut, Poona and Kashmir also took part in the deliberations. The Seminar recommended adoption of semester system first at the postgraduate level and thereafter at the undergraduate level.

For further dissemination of information and generating more awareness about the various facets of semester system, a two-day "Semester System Appreciation Programme" has been planned to be held in the University on 2 and 3 May 1980 for college teachers. Five teachers have been invited from each of the nine colleges offering B.A./B.Sc./B.Com. courses. The programme will be repeated so that more college teachers are associated with the study and understanding of the rationale, processes and procedures and implications of the semester system before the system is introduced in colleges.

After the initial exercise and course of discussions held in the meetings of the College Development Council, the Boards of Studies and the Faculties in May 1979 regarding the

proposed curricular and examinations reforms and formulation of a suitable educational design based on semester pattern, the Boards of Studies have been meeting again in April-May 1980 to consider course structuration in each subject, determine instructional objectives in each course and formulate detailed syllabi for the First Degree Pass and Honours Programmes under the semester system, for which comprehensive guidelines and formats were devised by the Academic Council. The Boards of Studies are also deciding the components and mode of continuous sessional evaluation and lists of additional books, journals and equipment required in colleges. Meetings of the Faculties will be convened after the Boards of Studies have made their recommendations. The Academic Council at its meeting held on 15 April 1980 have finalised the draft Statutes for the undergraduate and postgraduate courses under the semester pattern. It has been recommended that in non-laboratory courses the weightage of internal assessment should be 25% of the marks allotted to the course and in laboratory courses it should be in the ratio of 50:50. Since the set of abilities tested in continuous sessional work are different from those assessed in the semester examination, the performance of each student in the internal assessment and the semester examination is to be shown separately in the transcript to be issued to each student. The division in which a student is to be placed is, however, to be determined as a composite index on the basis of aggregate marks of the internal and semester examinations.

A two-day workshop has been designed to be held on the "Question Paper Design and Evaluation Techniques". Five teachers from each of the affiliated colleges have been invited to participate in this workshop.

After the syllabi for the Honours courses have been formulated, orientation programmes for college teachers are proposed to be organised in each postgraduate department for

discussion on the latest developments in the subject concerned. This will help in a participative effort to focus attention on the course content and instructional strategy for the proposed Honours Programme.

Sophistication of the tools of instruction and evaluation need special attention in order to make teaching-learning more effective and meaningful. At the same time it is necessary to develop question banks in each subject for the First Degree Programme to bring about better inter-action between what is taught and what is assessed. Monitoring of outcomes of the innovative measures to the academics is essential as a feedback for effecting improvements. Blue prints for holding workshops and training programmes on these aspects of the reformative measures have also been drawn up.

Foundation Courses

After the Academic Council approved an illustrative list of subjects to be introduced as Foundation Courses to generate general awareness among students at the First Degree Pass Programme, it has been decided to prepare reading material for the following Foundation Courses:-

1. Indian Cultural Heritage
2. Freedom struggle in India and other Parts of the World
3. Science in Everyday Life
4. Science, Technology & Development in India
5. Social and Economic Profiles of Jammu & Kashmir
6. Man and His Environment.

Senior academics have been selected to prepare the scope of study and course content and draft syllabus in each of the above courses and suggest mode for preparing reading material suited to our needs which will be arranged even by engaging commissioned authors. Every student at the undergraduate level will be required to offer one Foundation course in each semester.

Norms of workload and teaching staff

Adequate teaching staff is a pre-requisite for successful

implementation of the semester system. The Academic Council, on the recommendation of the College Development Council, has approved the following norms for the size of theory and practical, tutorial group and teaching load for teachers in the colleges:

- (a) size of a section in a theory class should not exceed 60;
- (b) size of group in a practical class should be 15 to 20 students per teacher;
- (c) a tutorial group should have about 15 to 20 students;
- (d) teaching load (direct contact hours) for a teacher should be 14 hours per week.

Normal work-load of a teacher is 40 hours per week which includes, besides direct contact with classes, time required in preparing lessons/laboratory, correcting/marking internal assignments, assessment, research guidance and supervising other academic and extra-curricula activities.

Planning & Research Unit

With the introduction of semester system and its essential concomitants, such as restructuring and enrichment of courses, continuous internal assessment, new teaching and evaluation techniques, question banks, etc. the University will be embarking upon a radical and ambitious change in terms of curricular and examination reforms. It has been felt that an expert central agency is essential to be set up in the University to serve as a research centre to nourish and sustain the new system with its avowed objectives to—

- formulate plans and proposals and devise processes and procedures connected with the implementation of semester system;
- assist in reviewing periodically the reforms introduced and monitoring information;
- serve as a watch forum and provide consultative services in regard to day-to-day problems relating to the reforms;
- help in preparation and sophistication of tools of teaching

and evaluation, development of question banks and better designing of question papers; — undertake empirical research in matters and problems relating to semester system.

It has therefore been proposed to set up a Planning and Research Unit in the University manned by a Consultant and Technical Assistants having specialised in Educational Measurement and Evaluation. The University Grants Commission has been approached to finance the project. The University of Jammu will indeed be playing a pioneering role if such an agency is set up and functions effectively.

It is expected that the preparatory measures and awareness courses undertaken or proposed to be undertaken in the University of Jammu will provide an effective base and solid prop for successful implementation of the new educational programme linked with semester system.

Students to be represented on the Senate and Academic Council

The Andhra Pradesh Education Minister, Mr. B. Venkatarama Reddy while inaugurating a seminar on students problems and cultural activities organised by the Andhra Pradesh Student Council said that students would be given representation in senates and academic councils of the universities in the State. The Bill to this effect was being presented to the Legislative Assembly in the next session. The Education Minister also said that the Government would introduce meaningful terminal courses at puls two stage to help the drop-outs. The government was also trying to restructure courses at the undergraduate level for the benefit of students. The vocational course would also be introduced at various levels to make students self-dependant. He said that there was no proper cultural forums for the students. If students were given opportunities, the so called indiscipline attributed to students would not be there.

UP Vice-Chancellors meet the Chancellor

Mr C.P.N. Singh, Chancellor of Universities and Governor of Uttar Pradesh while addressing the Vice-Chancellors of the State Universities in Lucknow pleaded for working out of a time table of action to deal with the problems facing various campuses. Referring to the problem of student unrest, Mr. Singh observed that they were said to be victim of changing values of society. They had no faith in the past and they had no hope for future. But if you begin to introduce changes in the examination system and if you begin to mobilise the large numbers who wish to study, the dimensions of the problem would certainly become much more manageable than they are today.

Mr. Singh said that there was problem of involvement of political parties with election to student bodies. He said that in a democratic society, students especially at the university stage, had a duty to acquaint themselves with the broad socio-economic and political issues before the country and to look at different solutions being canvassed by political parties.

The Governor called upon the Vice-Chancellors to initiate a serious effort to obtain a new situation in which youth could be the centre of educational process. He felt that the educational system has become obsolete and the time was running out. It was the time to act and give a thought for a reform in the existing pattern of education to suit the requirements of the youth. He said that it was unfortunate that our universities had not shown adequate awareness or responsiveness to the latest trends in educational research.

Describing the situation in the universities as uncontrollable and irreversible, Mr. Singh said that university education was gripped with serious maladies. The situation in Uttar Pradesh posed a greater challenge than anywhere else in the country. He said if all the four central values and powers of personality were rightly

balanced throughout the process of development and if a healthy equilibrium of these powers was upheld progressively, we could assure an integral development of personality which was indispensable to the highest aims of man's future evolution. These four values, he said, were knowledge, power, love and skill in works. Giving the reasons for the failure of finding out a satisfying solution to various problems of students, the Governor said there had been too much reliance on piecemeal thinking and ad hocism rather than on a global thinking and a right correlation of various issues.

The Vice-Chancellors' conference recommended the formation of security force consisting of teachers, students and the staff members on the lines of Home Guard to do away with the increasing demand for police pickets on the campus to maintain law and order. The Vice-Chancellors were also in favour of abolishing the first year examinations of the graduation course in view of the long period of time to conduct such examinations. A system of a year-long evaluation of the students' academic session would be an ideal alternative to it.

Dr. J.D. Shukla, Adviser to the Governor, on the concluding day said that the academic session of Lucknow and Allahabad Universities would begin some time in September since the universities had started their sessions late. Only Meerut and Bundelkhand Universities were in a position to begin their sessions in July. The rest of the universities would complete their sessions by September-end.

The Vice-Chancellors also strongly recommended that students who had been convicted of violence and moral turpitude should not be given admission. Further who had completed seven years in any university would not get re-admission. The conference felt that walk-outs should be treated as acts of indiscipline and no re-examinations should be held in such cases. At the centres where mass copying was

detected, the examinations should be cancelled and fresh examinations be held. As far as the students unions were concerned, the conference was of the opinion that those students who had put in less than one year and more than five years in a university should not be eligible to contest the union elections. This would discourage professional 'netas' from using universities as a plank for entering the State politics.

Dr. Shukla said that the Vice-Chancellors favoured permitting the use of Bare Acts in law examinations. They however felt that the practice of double post-graduation should be done away. Only private candidates should be allowed to do so. A system of continuous internal assessment should also be introduced at the postgraduate level to supplement annual examinations.

The conference also formed two committees to study the UGC's recommendations for the 10+2+3 system in the State and to go into the criteria for the appointment of degree college lecturers. An examination cell has also been set up to recommend reforms in the examination system.

HAU sports college taken over by Sports Deptt.

The Haryana Government has decided to delink the College of Sports from the Haryana Agricultural University and hand it over to the State Sports Department.

The students have been demanding for quite some time a change in the sports syllabus to make it really sports oriented. They wanted subjects like history, political science and sociology to be removed from the syllabus and suggested the inclusion of General Knowledge as one of the subjects. Students have also been pleading for more fund allocations for the Sports College rather than Sports School in Rai. They said that it was just a public school with no sports achievements. They are also opposed to the shifting of the Sports College to Rai.

Special General Body Meeting of AIU held in Delhi

A Special General Body Meeting of AIU was held at the India International Centre, New Delhi, on May 12-13, 1980. Dr. Ramaranjan Mukherjee, Vice-Chancellor, Burdwan University presided. It was attended by 45 Vice-Chancellors of the Universities in India besides, representatives of the Ministry of Education, the N.C.E.R.T. and the Central Board of Secondary Education. The Association of Indian Universities suggested to the Ministry of Education that it should convene a conference of the various all-India and professional bodies concerned with coordination and academic standards. This would refer in particular to the University Grants Commission, the Medical Council of India, the Indian Council of Agricultural Research, the Bar Council, the All-India Council of Technical Education and the Association of Indian Universities. These various bodies are concerned with the maintenance and coordination of standards. Over the years, these various bodies have gained a wealth of experience. It is important to bring them together and *establish coordination even amongst these various bodies*. Whether there should be a Standing Council of these various regulatory bodies under the chairmanship of the Minister of Education or not should also be discussed by this meeting. Owing to a number of non-academic reasons, the functioning of universities and other institutions of higher learning is not what it should be. Both for reasons of prestige and education being a concurrent subject now, it is but appropriate that the initiative in this respect be taken by the Union Ministry of Education.

2. The Association has pleaded for at least twice the allocation made to higher education in the previous Plan as the minimum for the Sixth Plan. It adopted the

following resolution.

“This meeting of the Association of Indian Universities feels gravely concerned over the drastic reduction in the allocation of Plan funds for higher education. While the Association fully appreciates the Government's move to place more resources for the expansion and development of primary, secondary and adult education, the Association feels that this should not be done at the expense of higher education because it is bound to prove counter-productive. A weakened system of higher education can hardly be instrumental in strengthening the other sectors of education.

The universities are in the process of development and they require adequate funds for stabilising standards of education and in order to fully develop their research potential. Postgraduate education in the country serves as the basic infrastructure for sustaining research in the universities as also in the country as a whole. There are currently efforts being made to make university research in science, technology and social sciences relevant to the solution of national problems. This effort is bound to receive a setback unless sufficient funds are made available to the universities.

The share of the universities and other institutions of higher education in overall research grants is already so small that they are hardly able to undertake meaningful research of an international standard.

Taking into account the present rate of inflation the allocation of even 50% to 60% more would only amount to barely maintaining the levels of the Fifth Five-Year Plan. It is therefore essential that for any significant development

to be registered during the Sixth Plan period the allocation for higher education should be much higher i.e. to say at least twice the allocation made for it in the previous Plan.

The Association therefore strongly urges the Government, the Planning Commission and all concerned bodies to provide higher education with the necessary wherewithal to enable it to play an effective part in making the nation self-reliant and accelerate the pace of development”.

3. The Association felt greatly concerned about the situation in Bihar. In the absence of concrete data and the general crisis situation in that State, the Association asked its President and Secretary to visit Bihar within the next few weeks and talk to the Chancellor and others connected with higher education so that, in the months to come, appropriate academic decisions are taken and the universities are enabled to get out of the morass in which they find themselves.

4. The increasing number of foreign students at the Indian Universities also came up for discussion. Amongst the difficulties referred to were the inability of a large number of these students to follow the instruction imparted in the class room, the concentration of these students in certain places, difficulties about accommodation, regular availability of funds from their homes etc. It was recommended to the Government that in order to deal with this problem some kind of a central coordinating agency should be created which should maintain liaison with the universities so as to avoid some of these problems. It was also recommended that a compulsory test be administered to these foreign students to test their linguistic ability before they are admitted to the various courses.

5. The meeting recommended that correspondence education be considerably strengthened, expanded and diversified. Such a policy would encourage even private candidates to make use

of the correspondence channel. The number of private candidates in various universities is substantial. If the correspondence channel could be made more efficient and more easily accessible, private candidates would perhaps find it more satisfying to go through the correspondence channel in so far as it would provide them with guided study.

Varsities : Operational Administrative Costs gobbling funds

The Association of Indian Universities has in a study suggested imposing a levy on professional graduates who migrate to other countries. The study, conducted by Dr. G.D. Sharma, says that this is necessary to reduce the higher cost of subsidised professional education.

The study has also suggested realisation of higher fee for professional courses from students having a well-to-do background.

Administrative and supporting services in the universities gobble up a larger proportion of funds than the teaching and research activities for which they have been set up.

The study says student services, which should receive a much higher proportion of funds than what is currently spent on them, have been declining of late.

Nearly 70 to 80 per cent of the total budget of the universities goes to meeting operational expenses. A third of this spent on teaching services. While only 15 per cent of the overall budget is kept for infrastructural development.

A comparison of cost structures of general and professional universities, however, reveals that the amount spent on teaching inputs in professional universities, is much higher than on administrative and supporting services.

The study suggest that a periodical and internal assessment system be introduced in all the universities since it had been found that the conduct of examinations in the professional universities under such system in-

volves much less expenditure than in others.

According to the study, the university system is not operating at an optimum level because of a lack of detailed educational planning about the feeder sector of the universities and because of pressures from politicians to locate a university in a particular area to serve their interests. Some universities set up under such pressures have failed to develop the right kind of ethos, the study says.

The study estimates that the optimal level of enrolment in a university should be around 3,000 students. Most of the universities, however, have students either above or below this level. The universities can reduce their per unit cost by almost half by operating at an optimal level.

The study says that over the years the university system in the country has acquired a big administrative structure. A thorough probe of the administrative system is needed to see what economies can be effected.

Positional astronomy centre located in Calcutta

India's first Positional Astronomy Centre (PAC) was formally inaugurated in Calcutta. It will provide data on positional and calendrical astronomy. The centre which had been functioning as National Almanac Unit (NAU) since 1945 has now been made independent and named Positional Astronomy Centre, as recommended by Ramanna Committee. It has been placed under the direct control of the Director-General of Meteorology.

Dr P.K. Das, Director-General, Indian Meteorological Department, who inaugurated the Centre, paid a tribute to its founding fathers, the eminent scientists Meghnad Saha and N.C. Lahiri. He stressed the need for close collaboration for progress and innovations. He urged the scientists to work in close accord with the Meteorological Department.

Prof. A.K. Saha, Director of

the Shah Institute of Nuclear Physics, Calcutta, who was the chief guest, said that it was absolutely necessary to develop our own computational methods for obtaining the basic ephemerides of the sun, moon, planets and the predictions of eclipses and occultations. The first director of the Centre, Mr A. Bandopadhyay, tracing the history of events that led to the establishment of the Centre, pointed out that the centre is the only organisation in India where all problems pertaining to calendars and perpetual calendars and proposals of world calendar are referred to.

Challenges to farm scientists

Dr M.S. Swaminathan, Deputy Chairman of the Planning Commission said in Bangalore that the 1980s would pose a challenge to agricultural scientists, especially in India. In his brief speech after being conferred the honorary doctor of science degree by the University of Agricultural Sciences, Bangalore, he said that scientists would have to tackle the problem of feeding the growing human and animal population. He said that another problem which would confront the scientists was unemployment. Ways and means would have to be found to increase the income of the rural poor.

Dr. R. Dwarikanath, Vice-Chancellor of the university while reading the citation said that Dr. Swaminathan, as a leader in agricultural science had developed a methodology for achieving growth with stability of production through programmes like crop cafeteria, mid-season correction in crop scheduling and alternative cropping strategies for different weather conditions in the various parts of the country. This had brought a new hope particularly to farmers of the dryland regions in India where for ages weather alone dictated human destiny.

Many academic posts created in Karnataka

The State Government of Karnataka have approved the creation of twentyeight professors'

posts and eightyone readers' posts with a separate cadre in the Department of Collegiate Education. The creation of these posts with a separate cadre would cost the State exchequer Rs 81 lakhs a year and ensure better promotional opportunities to the college teachers. The practice of having a common cadre for the college teachers in Collegiate Education Department and the Medical Education Department had limited the promotional prospects of the former. The Education Minister, Mr G.B. Shankar Rao had given an assurance to college teachers on fulfilling their long-standing demand.

The State cabinet also approved the creation of fifteen posts of Supernumerary Readers in the Collegiate Education Department. While the new professors' posts created would be in the pay scale of Rs. 1,000 to Rs. 1,825, the Readers' posts would be in the pay scale of Rs. 900 to Rs. 1750.

Semester system for Jammu

Jammu University has finalised a scheme for the introduction of semester system as part of the examination reforms. The Academic Council of the University has recommended that the semester system should be introduced in the graduate courses from the academic year 1980-81 and in undergraduate courses from the academic year 1981-82. These recommendations are yet to be considered by the University Syndicate and the University Council at their next meeting. In the meantime preparatory measures are being taken in regard to formulation of courses and syllabi for the undergraduate courses including the proposed honours degree. The Academic Council has also proposed that question banks, an important component of the University Grants Commission's plan for examination reforms, should be developed for the undergraduate including the honours degree. This work will be taken up as soon as the Board of Studies and the Faculties have finalised details of the new course structure and prepared the

syllabi for each course under the semester pattern.

The Board of Studies are expected to finalise the detailed syllabi early next month and the development of question banks will be taken up thereafter.

The university has already taken a decision to reorganise and restructure courses at the undergraduate level in accordance with the guidelines received from the University Grants Commission for the plus three stage under the new pattern of education. It has also decided that there will be two-year pass degree course after 12 year of schooling. This will be followed by a year of in-depth study for those wanting to take up honours courses. The components of the first degree, it is proposed, should include foundation courses in order to create in every student a great awareness of himself and of the social, cultural and natural environment and core courses to provide the student with a broad exposure to several disciplines and an opportunity to study some chosen subjects in depth and bring him at this stage to frontiers of knowledge in the areas of studies. The postgraduate education will be aimed at specialisation and orientation to research.

It is proposed that there should be a closer relationship between the academic component and the applied component of each subject so that a student could apply his theoretical knowledge to the problems of the region and those confronting him in day-to-day studies, project work and extension.

Hopes & fears of Biosciences

Dr. M.G.P. Stoker, Foreign Secretary and Vice-President of the Royal Society, London, said in Delhi that there was a world-wide fear that science was not being properly used to benefit a sufficiently wide section of the human race. Delivering the third P.M.S. Blackett memorial lecture on 'some hopes and fears in the biosciences', Dr. Stoker said some of the worries and fears and the altered attitudes to science which are apparent in the West

were worth consideration not the least because they might be an obstacle to the solution of some of the global problems. A recent poll in several European countries on behalf of the European Economic Community showed that majority in the European countries was deeply concerned about the new science-based technologies, affecting tiny, traffic and drugs. When a similar survey was undertaken two years ago there was no sign of any widespread mistrust of science. Discussing the contributions of biosciences, Dr. Stoker referred to the work of Indian plant geneticists in adapting the high-yielding varieties of rice and wheat to the local environment and said it was one of the great triumphs of India. He added that it was renowned throughout the world and a great example for the future. But modern plant breeding was based on the emergence of the science of genetics and without that branch of biological research the green revolution might never have happened. Dr. Stoker noted that like all discoveries, the contributions of biological science had brought new problems in their wake which now loom over us as threats for the future.

Madras guideline for BE admissions

The Syndicate of Madras University at its meeting held recently in Madras decided to recognise the BA/BSc degrees awarded by the Gandhigram Rural University for purposes of admission to higher courses of study in the Madras University and to allow improvement of performance for the candidates who were admitted to the BGL and BL degree courses at the commencement of academic year 1979-80 in one chance in the examination to be held in April or September, 1980.

The constitution of a separate Board of Studies for the Indian systems of medicines, starting of M.Pharm course in the university from 1980-81 and recognition of the Tamil Department for research leading to Ph.D. were among the other decisions taken at the meeting of the Syndicate. It also laid down the qualifica-

tions for admission of candidates to the first year of the four-year B.E. degree course commencing from the academic year 1980-81. Candidates must have passed the higher secondary examination of 10+2 curricula with mathematics, physics and chemistry as three of the four subjects of study under Part III or the higher secondary examination (vocational stream) through engineering and technology or the diploma in engineering examination of the State Board of Technical Examination or an examination of any university or authority accepted by this Syndicate as equivalent.

Farm education needs reorganisation

Dr. A.B. Joshi, Vice Chancellor, Mahatma Phule Krishi Vishwavidyalaya said in Hyderabad that the need for the agricultural universities to develop a technology which will step up substantially the levels of incomes of farmers was badly needed. He was delivering the convocation address at the Andhra Pradesh Agricultural University at Rajendranagar.

Dr. Joshi referred to the estimated foodgrain needs of the human population and the threatened shortages of farm inputs and said that more than increasing and stabilising agricultural production at high levels, "farming has to be made remunerative, cost of production will need to be reduced substantially, there will have to be more crop for every drop of water and for every grain of fertiliser and pesticides used."

Dr. Joshi said that it was "unfortunate" that the "lofty ideals" with which the agricultural Universities in the country were started (namely to achieve, in the whole range of activities of the university, the fullest of functional integration, staffwise and programmewise, of the trinity: education, research and extension education) were not translated into action in many farm universities.

Stating that this does not mean that the Agricultural University system as a whole failed, entirely or even largely, to come up to

the expectations that were anticipated from them, he said that it could, however, certainly be said "that things have happened in a far different manner than they might have been." "The aberrations were many and were of a rather serious nature," he added.

Dr. Joshi said that the ICAR (Indian Council of Agricultural Research) had pumped in crores of rupees, more especially since its reorganisation in 1965, for the development of farm universities in each State on sound lines. He referred to the negative attitude adopted by some States and Universities in implementing the projects and programmes of the Council and exhorted the ICAR to "examine if, in their own thinking even at this stage, the time had not come to discontinue or to substantially reduce, financial assistance to recalcitrant States and Universities."

New admission rules for IARI employees

The Indian Agricultural Research Institute has revised the rules governing admission of its employees to the institute's post-graduate school for higher studies. Now the employees of the scientific cadre seeking admission as departmental candidates would be required to proceed on study leave for pursuing higher studies. The technical staff would have to compete with regular open market candidates. The technical staff though not eligible to get admission as departmental students can of course apply for the grant of study leave. They can also take additional leave of the leave due to them for completing the degree requirements.

After the recent separation of the services into research and technical by the Indian Council of Agricultural Research, the body which governs IARI, the activities and function of these two categories have been formulated. In view of this development the situation has changed to the extent that the technical staff are now not included formally as project leaders for being associated in research projects and as such they cannot satisfy

the condition of continuing to work for research degrees of the same project as they are assigned in the department.

Madurai introduces M. Ed correspondence course

The Madurai Kamaraj University has introduced M.Ed course by correspondence. The course is aimed at developing professional attitudes, research competence and skills. This course is highly practical and students have to be guided personally to have meaningful research experience. They would be encouraged to write the theses and this will entail constant inter-action between the guide, colleagues and staff members. Periodical seminars in the college would also be organised. Doubts have been expressed in a section of academics about the skills and attitudes of those enrolling for the correspondence course and they feel that the correspondence course in this area would lower the M.Ed. standards and impair educational research and guidance.

ICMR widens research base to combat cancer

The Indian Council of Medical Research is evolving a national strategy to combat cancer. This follows the choice of the South Asian region by the World Health Organisation for developing and strengthening cancer control programmes at the national level. The strategy seeks to lay emphasis on research in the field of cancer detection and improving the treatment schedules. No systematic survey has been done so far in the country to assess the exact incidence of cancer, but the limited data available from the Bombay Cancer Registry has indicated that cancer takes a toll of nearly five lakhs a year. The ICMR advisory committee which met recently felt that the existing cancer registries in the country should be further strengthened and at least three more such registries covering different regions should be established. The ICMR has proposed to widen the base of research by involving medical colleges and research institutions in its programmes.

A list of Doctoral Theses Accepted by Indian Universities

Mathematics

1. Dwivedi, Bashishtha Dhar. Some investigations in the differential geometry of Finsler and areal spaces. University of Gorakhpur.
2. Krishna Murthy, M. Magnetohydrodynamic dusty viscous flows. Sri Venkateswara University.
3. Mohammad Thajuddin. Some problems of wave motion in porous elastic solids. Kakatiya University.
4. Mohan, R.N. Some problems in construction of combinatorial Designs. Vikram University.
5. Nageswara Rao, P. Problems in thermo-viscous fluid dynamics. Kakatiya University.
6. Pathak, Ashutosh. A study of expansion problems in Banach spaces. Vikram University.
7. Pawar, Purnima Laxmanrao. Certain problems in approximation theory and summability theory. University of Jabalpur.
8. Sharma, Sushil Kumar. A study in the absolute summability of Legendre series. Vikram University.
9. Somaraju, Pulugurtha. Spectrum of a class of non stationary processes and some ergodic theorems. Andhra University.

Physics

1. Bhatnagar, Prem Swarup. Study of square corrugated waveguide and horn antennas. Vikram University.
2. Bhattacharyya, Ajoy Kumar. On some problems of analog and digital phase locked loops. University of Burdwan.
3. Chattopadhyay, Milan Kumar. Some aspects of double electron ejection in the photo-absorption process. University of Burdwan.
4. Chaudhari, Puran Singh. Luminescence studies of some co-precipitated ZnS phosphors. Vikram University.
5. Gogoi, Someswar. Dielectric properties and conduction phenomena in vacuum deposited films of some II-VI compounds. Dibrugarh University.
6. Jain, S.K. Strength of solids under deforming forces. University of Jabalpur.
7. Kanagala, Rama Mohan Rao Subba Rao. Studies in rotationally symmetric turbulence with anisotropy and magnetohydrodynamic turbulence. Marathwada University.
8. Kandpal, Mohan Chandra. Mossbauer effect studies in some liquid crystals. University of Delhi.
9. Kanik Ram. Spectroscopic studies of some aromatic N-heterocyclic compounds. University of Gorakhpur.
10. Mozumder, Atish. Study of the γ -N and the γ -N nucleus interactions at 50 Gev in nuclear emulsion. University of Delhi.
11. Sapre, Ashok Kumar. Role of nuclei of galaxies and quasi-stellar objects in the evolution of galaxies. Ravishankar University.
12. Sarmah, Nirendra Chandra. Interacting bosons and properties of liquid helium at very low temperatures. Dibrugarh University.
13. Tewari, B.N. Infrared and ultraviolet absorption spectra of some benzene derivatives. University of Gorakhpur.
14. Thimma Naidu, G. Spectroscopic studies on certain diatomic molecules. Sri Venkateswara University.
15. Veerabhadra Rao, D. Studies in automatic lens design methods. Kakatiya University.

Chemistry

1. Borthakur, Baleen. Chemical investigation on certain medicinal plants of Assam with special reference to olefinic acids. Gauhati University.
2. Chandhok, Shiv Mohan. Structural studies on the constituents of some Indian medicinal plants. University of Jabalpur.
3. Chattopadhyay, Lina. Naturally occurring heterocyclic compounds. University of Calcutta.
4. Das, Shonit Ranjan. Studies on 3-hydroxyanhydronal. Gauhati University.

5. Desai, N.V. Development of composite membrane for the reverse osmosis process. Saurashtra University.

6. Deshmukh, Prabhakar Sankarrao. Studies of substitution effect and thermodynamics of some thallium (I) complexes. Vikram University.
7. Dey, N.C. Flow characteristics of dilute polymer solutions in unconsolidated porous media. I.S.M., Dhanbad.
8. Dwivedi, Karunesh Dhar. Chemistry of eutectics. University of Gorakhpur.
9. Goel, Subhash Chander. Alkenoxide derivatives of various elements. University of Delhi.
10. Gupta, Ram Murat. Studies on polyphosphates and their derivatives. University of Gorakhpur.
11. Hanumantha Rao, Kota. Studies on the oxidation of some organic compounds by peroxydisulphate. University of Jabalpur.
12. Hari, Subhash Chander. Preparation and characterisation of some new organometallic compounds of molybdenum (VI). University of Delhi.
13. Jaiswal, Paramjit Singh. Covalency and magnetic properties of low symmetry paramagnetic compounds. University of Delhi.
14. Kapoor, Rakesh. Anodic oxide films on valve metals. Maharshi Dayanand University.
15. Krishan Chander. Statistical thermodynamics of binary mixtures of non-electrolytes. Maharshi Dayanand University.
16. Kundu, Samar Kumar. Studies on glycosphingolipid: Structure and organic molecules of potential interest. University of Calcutta.
17. Mani, Raghupati. Studies on co-frequencies and co-force constants in group VI metal carbonyls and their derivatives. University of Gorakhpur.
18. Maru, Paraschandra. Studies on some metal hydroxamates and their analytical applications. Vikram University.
19. Mukhopadhyay, Prasantakumar. Studies on ion exchange equilibria of some cations on Amberlite IR-120. University of Calcutta.
20. Muktibodh, Suresh Basant. Organic analytical reagents. Vikram University.
21. Prabhakara, R. A study of geometrical isomerism in some unsaturated sulphide-sulphones and disulphones. Sri Venkateswara University.
22. Ram Shabd. Thermodynamic studies on electrokinetic phenomena. University of Gorakhpur.
23. Ray, Naminath. Microbiological transformation of steroids. University of Calcutta.
24. Shiv Saran Das. Thermodynamic properties of ternary liquid mixtures. University of Gorakhpur.
25. Singh, Radhey Shyam. Kinetics and mechanisms of oxidation of sugar by Cu(II) in reference to ammonium hydroxide. University of Gorakhpur.
26. Thakar, Shreeram Bhaskar. Studies on the synthesis of heterocyclic compounds. Karnatak University.
27. Trivedi, T.B. Evaluation of thermodynamic parameters (functions) of solutions. Saurashtra University.
28. Vohra, Neelam. Complexes of hapach & E-2 hydroxy-3-methyl (-2-butenyl)-1-4 naphthaquinone. Garhwal University.

Engineering & Technology

1. Jakkiwar, Madhukar Shankar. Utilisation of Vanadiferous titanomagnetite from Khursipar, Dist. Bhandara, Maharashtra. Nagpur University.

Earth Sciences

1. Das, Pradip Kumar. Geology of the tertiary formations in and around Kimini of Subansri District, Arunachal (N.E.F.A.). Himalaya. Gauhati University.

2. Rakesh Kumar. Development of some interpretation techniques in direct current resistivity methods. I.S.M., Dhanbad.

3. Venkataraman, Challagundla. Geology of the pre-cambrian rocks of Podili and Darsi areas, Andhra Pradesh with reference to groundwater quality. Andhra University.

BIOLOGICAL SCIENCES

Anthropology

1. Chengal Reddy, P. Population structure and genetic variation of Malas of Chittoor District, Andhra Pradesh. Sri Venkateswara University.

Biochemistry

1. Chattopadhyay, Jyotiprakash. Control of fungal infections by antifungal antibiotics. University of Calcutta.

2. Das, Saroj Kanti. Lipids and lipolytic enzymes of *Trichophyton rubrum*. University of Calcutta.

3. Pal, Basudeb. Effect of potassium on nitrogen metabolism with special reference to urea production. University of Calcutta.

4. Raychaudhuri, Malaykanti. Chemical and biochemical studies on penicillin and its producer organism *penicillium chrysogenum* and studies on *Halobacterium*. University of Calcutta.

5. Saha, Samir Kumar. Studies on pesticides and their metabolites with special reference to ethyl parathion. University of Calcutta.

Microbiology

1. Walia, Satish Kumar. Plasmid studies in *Klebsiella pneumoniae*. Maharshi Dayanand University.

Botany

1. Agarwal, Anuradha. Studies on the host parasite interaction in *Curvularia* rot of citrus fruits. University of Jabalpur.

2. Bhattacharyya, Sabita. Studies on mutation and transformation in *Spirillum lipoferum*. University of Calcutta.

3. Biswas, Arun Kumar. Studies on the mechanism of senescence in rice *Oryza sativa* L. CV Jaya: Hormonal and nutritional control of the process and its influence on yield. University of Burdwan.

4. Chakraborty, Arabinda. Studies on X-ray irradiated mature and developing embryos of rice. University of Burdwan.

5. Damodaram Naidu, V. Factors influencing the virulence of *Xanthomonas oryzae* the incitant of bacterial blight of rice. Utkal University.

6. Davinder Kaur. Morphological, embryological and anatomical studies in the family *Araucariaceae*: I *Agathis robusta* (C. Moore) F.M. Bailey II. *Araucaria cunninghami* Ait ex Lamb. University of Delhi.

7. De, Asit Baran. Anatomical and cultural studies on some Indian *Polyporaceae* in relation to their taxonomy. University of Burdwan.

8. Dutta, Amal Kumar. Studies on some qualitative and quantitative aspects of foliar histology. Visva Bharati.

9. Dutta, Roma. Studies on (1) Chromosomes as an aid in the interpretation of affinities, phylogeny and evolution; and (2) Response of cell nuclei to hormone treatments. Visva Bharati.

10. Ghosh, Kantishree. Studies on the host parasite interaction in *collectotrichum* rot of citrus fruits. University of Jabalpur.

11. Ghosh, Kasinath. Allelopathic potential of two species of *Chenopodium* Linn. University of Calcutta.

12. Giri, Gowda, P. Cytogenetical studies in *bougainvillea*. Karnatak University.

13. Joshi, A.J. Physiological studies on some halophytes. Saurashtra University.

14. Pal, Balaram. Biology of *Fusarium graminearum* Schw with special reference to biochemical deterioration in malformed tissues of gardenia and control of the disease. University of Burdwan.

15. Patil, Bikasranjan. Studies on the phyllosphere of crop plants. University of Calcutta.

16. Rawal, Shuban Kishen. Some physiological aspects of growth and differentiation in diploid and haploid tobacco tissues grown in culture. M.S. University of Baroda.

17. Sharma, Ranjana. Studies on the microfungus population on the leaf surface of *crotalaria juncea* L. University of Delhi.

18. Singh, K.N. Studies on combining ability and heterosis breeding in barley. University of Gorakhpur.

19. Srivastava, Kanchan Lata. Studies on mucorale. University of Gorakhpur.

20. Subbarami Reddy, Kanjula Venkata. Blue-green algae of some cultivated fields of Vidarbha. Nagpur University.

Zoology

1. Adhulia, Upkar Narayan. Studies on hydrobiology of River Betwa and its fishery resources. Vikram University.

2. Bandyopadhyay, Sibdas. Basal laminar glycosaminoglycan in *epithellia* morphogenesis. University of Calcutta.

3. Devendra Kumar. A comparative study of the copulatory apparatus and genital muscles in the males of *Phytophaga*. Ravishankar University.

4. Hussaini, Syed Abdul Majid. Studies on development of bioassays of pesticide residues in food storage. Kakatiya University.

5. Naik, Amrit Lal. Development and morphology of skull in relation to latero system in *Barbustor*. Ravishankar University.

6. Narasimha Reddy, M. Subcellular electro-migratory studies in relation to denervation atrophy in amphibian skeletal muscle. Sri Venkateswara University.

7. Rao, K.M. Study on the structure and post-embryonic development of reproductive organs in certain insects. Vikram University.

8. Rathore, Hemant Singh. Study on the influence of various factors on puffing in dipteran giant chromosomes. Vikram University.

9. Sawhney, R. A study on the anatomy of the Indian squirrel, *Funambulus palmarum*. University of Jabalpur.

10. Subrahmanyam, Muthangi Veera Venkata. Ultra-structure and ecophysiology of fresh water field crab, *Oziotelphusa senex senex* adapted to higher salinity. Andhra University.

11. Tilak, Kolluru Samba Siva. Studies on the persistence of carbaryl in the environment and its effect on fresh water fish. Andhra University.

12. Viswanathan Iyer, Seethalakshmi. Studies on some parasitic Protozoa from some invertebrates. Marathwada University.

Medical Sciences

1. Agarwal, B.K. Hormonal activation and inactivation for some enzymes of the reproductive tract. University of Jabalpur.

Agriculture

1. Arora, Aneeta. Responses of cultured cell-lines and whole plants to salt stress in wheat. Haryana Agricultural University.

2. Chakrabarti, Gurudas. Studies on water stable aggregates and their interaction with other associated properties of some soil groups of West Bengal. University of Calcutta.

3. Mukhi, Anil Kumar. Zinc availability under the salt affected and waterlogged soil conditions. Haryana Agricultural University.

4. Nageswara Rao, Amirineni. An economic analysis of distribution and marketing of pesticides in Andhra Pradesh. Haryana Agricultural University.

Veterinary Science

1. Gupta, Lajpat Rai. Effect of certain feeding practices on performance of old and young Murrah Buffaloes. Haryana Agricultural University.

2. Kalra, Sunil. Genetic studies on some important pelt characteristics in Karakul sheep and its crosses. Haryana Agricultural University.

3. Yoginder Kumar. A study on *Salmonella enterotoxin*. Haryana Agricultural University.

Additions to AIU Library

- Aggarwal, J.C. *Recent educational developments in world.* Delhi, Arya, 1971. xi, 248p.
- Ariyadasa, K.D. *Management of educational reforms in Sri Lanka.* Paris, Unesco, 1976. 41p.
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Distance Education

(Continued from page 267)

instructions, independent learning and informal education through new media is a dire necessity of the day. It is in this context that the developing countries are now committed to providing correspondence courses. That is why today more than one crore students are studying in the various countries of the world only through the correspondence courses. We have made a humble beginning in India.

7. Films, Radio, Televisions, open libraries, programmes instructions and educational technology are the modern mass-media of transmission of education. To this we must add the correspondence courses in which we may use especially prepared correspondence lessons and contact programmes. Here I would make a new suggestions in making the correspondence educational programmes more successful :

1. The present styles of lessons may be made more stimulating, motivating, interesting and easy to grasp. I have myself prepared correspondence lessons of Delhi University accord-

ing to a set pattern prescribed by the University. But I am not satisfied with that.

- 2 All the easily obtainable mass-media such as Radio, Television and Films (which can be sent to different centres) may be included in the Methodology.
3. Many of the lessons may be got prepared on the pattern of Programmed Instructions which have a special feature of combining subject matter and assignment, learning and evaluation as well as reading and thinking.
4. During the contact programmes, special time may be devoted to the oral discussions and oral testing work in which each student will get the opportunity of expressing orally what he has studied and discussing the subject matter with the tutors.

8. The correspondence centres in various parts of the country could provide the teaching machines for purposes of self-instructions. I would suggest that the Universities get a handsome grant from the U.G.C. or the Central Ministry for conducting research in educational technology and preparing programmed instructions and teaching machines for the use of the correspondence courses. □

INDIAN INSTITUTE OF TECHNOLOGY KHARAGPUR

Advertisement No. R/2/80
Dated 11th April, '80.

Applications are invited for the undermentioned posts at the Indian Institute of Technology, Kharagpur, West Bengal :—

POSTS:

I. PROFESSORS

Scale of Pay : Rs. 1500-60-1800-100-2000-125/2-2'00/- plus D.A. as admissible.

Age : Preferably below 50 years.

Qualifications : Essential

- (i) A good academic record with a Bachelor's or Master's degree in the appropriate branch and a Doctorate degree.
- (ii) Twelve years' experience in the field of specialisation prescribed, of which at least 5 years should be in teaching and/or research.
- (iii) Published research work of good quality in Journals of repute.
- (iv) Experience in guiding research.

Desirable:

- (i) Experience of teaching post-graduate classes,
- (ii) Good design and/or industrial experience.

N.B. If a person is not found suitable for the post of Professor, he may be offered the post of Associate Professor in the grade of Rs. 1500-2000/-

Vacancies & Specialisations:

- (i) **Aeronautical Engineering Department** (Two Posts)

Specialisation:

One Post: Aircraft Design and the other post: Aircraft Propulsion.

- (ii) **Chemistry Department** (One post)

Specialisation in one or more of the following;

Organic/Inorganic/Physical/Applied Chemistry.

- (iii) **Electrical Engineering Department** (One post)

Specialisation in one or more of the following:

- (a) Electrical Machines and Drives
- (b) Power System Engineering (c) Control System Engineering (d) Instrumentation

- (iv) **Industrial Management Centre** (One post)

Specialisation in one or more of the following:

- (a) Maintenance Engineering (b) Industrial Dynamics (c) Personnel Management and Industrial Relations (d) Industrial Management.

- (v) **Mathematics Department** (One post)

Specialisation in any of the following:

- (a) Statistics (b) Operations Research, (c) Fluid Mechanics (d) Numerical Analysis (e) Computer Science.

- (vi) **Mechanical Engineering** (One post)

Specialisation in one or more of the following:

- (a) Production Engineering (b) Thermal Science (c) Solid Mechanics (d) Mechanical Handling of Materials.

- (vii) **Metallurgical Engineering Department** (One post)

Specialisation in any of the following:

- (a) Corrosion (b) Physical (c) Non-ferrous extractive and (d) Metal casting and solidification.

- (viii) **Naval Architecture** (One post)

Specialisation in one or more of the following:

- (a) Ship Structures (b) Ship Machinery (c) Naval Architectural aspects of Ocean Engineering.

- (ix) **Physics Department** (Three posts)

One post in each of the following specialisations:

- (a) **Mathematical State Physics**—Preferably in quantum mechanics and relativity with applications to semiconductor physics.

- (b) **Theoretical Solid State Physics** Preferably Lattice vibrations and thermodynamical properties of solids.

- (c) **Experimental Solid State Physics**—Preferably crystal growth, crystal optics, thin film physics etc.

(Those who applied against Advertisement No. R/1/77 need not apply again)

II. ASSISTANT PROFESSORS

Scale of Pay: Rs. 1200-50-1300-60-1900/- plus D.A. as admissible.

Age: Preferably between 30 and 45 years.

Qualifications: Essential

- (i) A good academic record with a Bachelor's or Master's degree in the appropriate branch and a Doctorate degree.

- (ii) Seven years' experience in the field of specialisation prescribed, of which at least 2 years should be in teaching and/or research.

Desirable

- (i) Published research work of good standard.

- (ii) Experience in guiding research.

Vacancies & Specialisations:

- (i) **Agricultural Engineering Department** (One post)

Specialisation in one or more of the following:

- (a) Farm Power and Machinery (b) Soil and Water Conservation Engineering (c) Dairy and Food Engineering (d) Applied Botany (e) Soil Technology (f) Agronomy.

- (ii) **Electrical Engineering Department** (Four posts)

Specialisation in one or more of the following:

- (a) Electrical Machines and Drives (b) Power System Engineering (c) Control System Engineering (d) Instrumentation.

- (iii) **Humanities Department** (One post)

Specialisation in any of the following:

- (a) Economics (managerial, industrial or labour) (b) Psychology (educational, industrial or social).

- (iv) **Industrial Management Centre** (One post)

Specialisation in one or more of the following:

- (a) Maintenance Engineering (b) Industrial Dynamics (c) Financial Management (d) Marketing Management.

- (iv) **Mechanical Engineering Department** (Two posts)

Specialisation in one or more of the following:

- (a) Solid Mechanics (b) Fluid Mechanics & Fluid Machinery (c) Mechanical Handling of Material (d) Instrumentation (e) Heat & Mass Transfer (f) Combustion (g) I.C. Engines (h) Metal Forming (i) Manufacturing Processes.

- (v) **Metallurgical Engg. Department** (Two posts)

Specialisation in any of the following:

- (a) Foundry (b) Mechanical Metallurgy.

- (vi) **Mining Engineering Department** (Four posts)

Specialisation in one or more of the following:

- (a) Mining Engineering (b) Mine Surveying (c) Mining Machinery (d) Mechanisation.

For the specialisation in Mining Machinery/Mechanisation Degree holders in Mechanical Engg. may also apply.

- (vii) **Chemical Engineering Department** (One post)

Specialisation in any of the following:

- (a) Petroleum Refinery Engineering (b) Biochemical Engineering with a Ph.D. degree in Chemical Engineering.

III. ASSISTANT PROFESSOR (LIAISON OFFICER)—

Industrial Consultancy Centre—
One temporary post of 2 years' duration in the first instance, but likely to continue.

Scale of Pay: Rs. 1200-50-1300-60-1900/- plus D.A. as admissible.

Age: Preferably between 30 and 45 years.

The qualifications for this post are as stated above for the post of Assistant Professor (in any branch of engineering or technology).

The person recruited shall assist the Dean of Sponsored Research & Consultancy in organising the Industrial Consultancy Centre of the Institute. He will also be the Liaison Officer between the industries of the region and the Institute with a view to promoting consultancy activities.

(Those who applied against Advertisement No. R/10/79 need not apply again).

IV. LECTURERS

Scale of Pay: Rs. 700-40-1100-50-1600/- plus D.A. as admissible.

Age: Preferably between 25 and 38 years.

Qualifications: Essential

- (i) A good academic record with a Master's degree in the appropriate branch.
- (ii) Two years' professional experience.

Desirable: A doctorate degree.

Vacancies & Specialisation:

- (i) Aeronautical Engineering Department (One post)

Specialisation in one or more of the following:

Aerodynamics or Aircraft Design.

- (ii) Agricultural Engineering Department (One post)

Specialisation in one or more of the following:

- (a) Dairy Engineering, (b) Food Engineering, (c) Dairy Technology, (d) Food Technology.

- (iii) Chemical Engineering Department (One post)

M. Tech. Degree in Petroleum Refinery Engineering and/or experience in Petroleum Refineries after a Master Degree in Chemical Engineering.

- (iv) Electrical Engineering Department (One post)

Specialisation in one or more of the following:

- (a) Electrical Machines and Drives (b) Power System Engineering (c) Control System Engineering (d) Instrumentation.

- (v) Humanities Department (One post)

Specialisation in French

- (vi) Naval Architecture Department (Three posts)

Specialisation in one or more of the following:

- (a) Ship Design (b) Shipbuilding Technology (c) Ship Structure (d) Ship Machinery (e) Naval architectural aspects of ocean engineering.

- (vii) Physics (1 post)

Specialisation in one or more of the following:

- (i) X-rays & Structure of matter (ii) Experimental Solid State Physics (iii) Nuclear Physics (iv) Instrumentation involving LASERS, X-Rays, electron optics etc.

Note: The following are applicable to Posts of Professors, Assistant Professors and Lecturers;

- (a) In all cases experience means experience gained after obtaining the Master's degree.

- (b) For the posts of Industrial Management Centre, Mining Engg & Naval Arch. Depts. if suitable candidates with prescribed essential qualifications are not available then the minimum educational requirements may be relaxed.

- (c) Relaxation of the minimum educational requirements may also be done in the case of candidates having outstanding research

achievements or long and meritorious industrial design experience.

V. ASSISTANT ENGINEER

(Mechanical)—One post

Scale of pay: Rs. 650-30-740-35-810-EB-35-880-40-1000-EB-40-1200/- plus D.A. as admissible.

Age: Not less than 30 years.

Qualifications & Experience: Essential

- (a) A graduate in Mechanical Engineering or equivalent.

- (b) A minimum of 3 years experience in the maintenance and operation of refrigeration and air-conditioning plants, room air-conditioners and water coolers.

Desirable:

- (a) Experience of maintenance and servicing of petrol and diesel driven vehicles. (Those who applied against Advertisement No. R/10/79 need not apply again).

VI. ASSISTANT ENGINEER

(Horticulture & Sanitation)—

One post

(The post is reserved for ST candidates. General candidates are also eligible to apply. The general candidates will be considered if no suitable ST candidates are available for appointment to the vacancy).

Scale of Pay: Rs. 650-30-740-35-810-EB-35-880-40-1000-EB-40-1200/- plus D.A. as admissible.

Qualifications: Essential

- (a) A graduate in Public Health Engineering or Civil Engineering with about 3 years of relevant experience in the field of sanitation.

- or (b) A three-year diploma in Public Health Engineering or Civil Engineering with about 7 years relevant experience in the field of sanitation.

Desirable

Some experience in the field of Horticulture.

Job Requirements

- (i) Able to prepare estimates, design and supervise Civil construction works in sanitary works and water works and able to organise and supervise municipal services like sewage systems, garbage clearance, water systems, mosquito control road maintenance and Horticultural works etc.

- (ii) Able to handle the horticultural and sanitation (males and sweepers) staff and organise municipal services, including handling and maintenance of stores.

- (iii) Any other works as may be assigned by his superior in-charge or the Director.

Application forms may be had from the Registrar on request along with an unstamped self-addressed envelope of size 23 cm x 10 cm. Applications accompanied with an application fee (non-refundable) of Rs 7.50 (Rs. 1.87 for SC/ST candidates) payable by

means of crossed Indian Postal Order to the Indian Institute of Technology, Kharagpur, at Kharagpur-2 post office should reach the Registrar, IIT, Kharagpur by the 31st May 1980.

Applicants who are in the employment of Government/Semi-Government organisations or of any Government undertaking must send their applications through proper channel.

A.K. Sur
REGISTRAR

INDIAN INSTITUTE OF TECHNOLOGY KANPUR

Advertisement No. 15/80

Applications are invited for 15 posts of Research Engineers 'B' and 'A' in the Advanced Centre for Electronic Systems of the Electrical Engineering Department in the following scales:

Research Engineer 'B' : Rs. 1100-50-1600

Research Engineer 'A' : Rs. 700-40-900-EB-40-1100-50-1300.

The selected candidates will be working on sponsored research and development projects, assigned to them from time to time. Presently, the Centre is engaged in projects in the areas of fibre optics communication, radar clutter, ELF Communication, Digital Signal and Image processing, Lasers and Lasers Systems, High precision Instrumentation for signal averaging and microprocessor-based signal processing, special semi-conductor device development and computer aided design. These projects are currently sponsored by Ministry of Defence, DST and Electronics Commission.

(a) Qualifications: Essential

The applicants must have First Class Bachelor's degree in Electrical Engineering with good academic record and specialisation in any of the following areas of Electronics and Communication :

- (i) Design of digital subsystems and interface to computers; Microprocessor and related software.
- (ii) Electronic circuit design—digital, linear and RF.
- (iii) Radar signal processing.

(b) Desirable:

A Master's degree in Electrical Engineering with specialisation in Electronics and Communication shall be preferred.

The requirement of First Class in Bachelor's degree may be relaxed for candidates possessing exceptionally good experience in the areas of specialisation.

Depending on their qualifications and experience, the selected candidates may be offered any of the two positions, mentioned above.

The posts are contractual for an initial period of three years which may further be extended by another three years. Research Engineers after satisfactory completion of six years of continuous contractual service would become eligible for consideration for permanent positions of research engineers in the Institute.

Residential housing, when available, is provided on the Campus. The Campus facilities include primary and higher secondary schools, a health centre and a shopping centre.

All the appointments will be on contract. Besides pay, posts carry allowances according to Institute rules which at present correspond to those admissible to Central Government employees stationed at Kanpur. Higher initial pay is admissible to specially qualified and deserving candidates. Candidates called for interview will be paid second class railway fare for travel inside India from the place of duty to Kanpur and back by the shortest route.

In the category of Research Engineer 'A' one post will be reserved for SC/ST candidates. In the event of non-availability of SC/ST candidate, the reserved post would be treated as dereserved.

Applications from within India must be made on prescribed form obtainable free of charge from the Registrar of the Institute by sending a self-addressed unstamped envelope of 25 cm x 10 cm size. Applications should be accompanied by a postal order for Rs. 7.50 (Re. 1.87 for SC/ST candidates).

Applicants who are employed in a Government/Semi-Government organisation or Institute, should send their applications through proper channel, else they will be required to produce a 'No Objection' certificate from their employers at the time of interview.

Persons abroad may apply on plain paper (three copies) including an account of their academic and professional records and reprints of publications, fields of specialisation etc. They should also give names of at least three persons who are intimately acquainted with their academic activities and from whom reference letters may be obtained.

Applications should reach the Registrar, Indian Institute of Technology, I.I.T. Post Office, Kanpur-208016 on or before June 10, 1980.

JAMIA MILLIA ISLAMIA

Jamia Nagar, New Delhi-110025

Advertisement No. 1/80-81

Applications on the prescribed form which can be had from the Registrar's Office on any day (except Sundays and Holidays) between 10.00 a.m. to 12.00 Noon or by sending a self addressed and duly stamped (30 paise) envelope of 10 x 23 cms., are invited along with the crossed postal order or Bank Draft of Rs. 3/- for the following posts so as to reach the Registrar by 1.00 p.m. on 7-6-1980.

Ability to teach in Urdu and Hindi is a desirable qualification for teaching posts and knowledge of Urdu and Hindi is essential for non-teaching posts.

D.A., C.C.A., H.R.A., P.F., Gratuity, Pension etc. and such other benefits will be given according to Jamia rules.

Relaxation in any of the qualifications may be made on the recommendation of the Selection Committee in exceptional cases.

Four Lecturers (Grade: Rs. 700-1600) one each in Social Work, English (permanent), Sociology and Physics (leave vacancies).

- (a) A Doctor's degree or research work of an equally high standard in the relevant subject; and
- (b) Consistently good academic record with 1st or high 2nd class Master's degree in the relevant subject or an equivalent degree of a foreign university.

For the posts of lecturer in Social Work and Sociology experience in teaching/training in Applied Social Sciences projects would be a desirable qualification.

Four Lecturers in Education (Grade: Rs. 700-1600) one each in Experimental Education, Geography (permanent) Civics and Mathematics (leave vacancies).

- (a) A Doctors' degree in Education or research work of an equally high standard; and
- (b) Consistently good academic record with 1st or high 2nd class Master's degree in the relevant subject or an equivalent degree of a foreign university.

OR

- (a) A Doctors' degree in the relevant subject or research work of an equally high standard; and
- (b) Consistently good academic record with an M.Phil degree in Education or an equivalent degree of a foreign university.

For the post of Lecturer in Experimental Education the candidates should have Master's degree in Education with specialisation in Experimental Education or Master's degree in Psychology with specialisation in experimental psychology.

For the post of Lecturer in Mathematics candidates should have Master's degree in Education with specialisation in Teacher Education and/or research methodology and educational statistics. Preference will be given to candidates with an additional Master's degree in Sociology, Philosophy or Economics.

For the post of Lecturer in Education (Geography) specialisation in Advanced Cartographic and/or Quantitative techniques at M.A. level and for the post of Lecturer in Education (Civics) proficiency to teach Civics, as well as History or Sociology to B. Ed. students will be a desirable qualification.

One Lecturer in Art Education (Grade: Rs. 700-1600)—Temporary likely to be made permanent.

Essential:

- (i) At least high Second Class Higher Secondary or its equivalent. (ii) At least high Second Class Diploma in Fine Arts of 4 or 5 years duration from a recognised Art Institution or its equivalent.

Desirable:

- (i) At least two years teaching experience preferably in History of Art and Art Appreciation to graduate/under-graduate students. (ii) At least high Second Class B. Ed. (Art) or equivalent Professional training. (iii)

Professional standing as an artist with one-man shows and participation in National and International exhibitions. **One Registrar: (Grade: Rs. 1100-1600)** (likely to be declared at par with the Registrars of other Central Universities) (permanent).

Essential:

A second class Master's degree and experience of educational administration at the Executive level for at least 8 years. Proficiency in noting and drafting in Urdu and English.

Desirable:

(i) Experience of University administration and familiarity with the working of University bodies and institutions including admission, college administration, accounts rules relating to fixation of pay, inspection of reports etc. (ii) Knowledge of Hindi.

One Secretary to Shaikhul Jamia (Vice-Chancellor) (Inter-changeable with Asst. Registrars) Grade: Rs. 700-1600.

Essential:

A second class graduate with at least 10 years' experience of working in an academic institution/Govt. Office/Public Sector undertaking/Statutory Body of which 5 years must be as personal Assistant to a senior officer. Proficiency in noting and drafting in Urdu and English.

Desirable:

Knowledge of Hindi.

Two Professional Juniors (Grade: Rs. 700-1300) (Permanent).

- (a) Second Class M.A./M.Sc./M.Com degree and second class B. Lib. Sc. degree.

OR

Second class B.A./B.Sc./B.Com. degree and second class M.Lib.Sc. degree.

- (b) At least 2 years experience in a professional capacity in an established Library.

Five Professional Assistant (Grade: Rs. 550-900) (Permanent). One reserved for Scheduled Caste/Tribe subject to availability.

Second Class B.A./B.Sc./B.Com. degree and second class B.Lib.Sc. degree with 2 years' experience of working in an established Library.

One P.G.T. in History (Grade: Rs. 550-900) (leave vacancy).

(i) Masters degree of a recognised University in the subject concerned. (ii) University Degree or Diploma in teaching OR 3 years teaching experience in a college OR 7 years teaching experience in a High or Higher Secondary School.

One T.G.T. Commerce (Grade: Rs. 440-750) (permanent).

Essential:

(i) At least second class graduate degree in Commerce of a recognised University. (ii) A University degree/diploma in teaching.

Desirable:

(i) Shorthand & typing in High School and Intermediate/Higher Secondary School as a subject of study or a certificate in Shorthand and typing (ii) At least two years experience in Teaching Middle/High School classes of a High/Higher Secondary School.

One Teacher in Hindi and Hindu Ethics—(Grade: Rs. 550-900) (Permanent). Faculty of Humanities & Sciences.

(i) M.A. in the subject concerned. (ii) B.T. or (iii) 3 years teaching experience in college classes or (iv) 7 years teaching experience in Schools.

Two T.G.T. (Grade: Rs. 440-750) one each in Islamiat and Agriculture (permanent).

Essential:

(i) At least second class degree of a recognised university in the subject concerned. (ii) A University degree/diploma in teaching

Desirable:

At least two years experience in teaching Middle/High classes of a High/Hr. Sec. Schools.

S.H. Naqvi

OSD/OFFG. REGISTRAR

UNIVERSITY OF RAJASTHAN JAIPUR

Advertisement No. 11/80

Applications are invited (through proper channel in case of those already in employment) so as to reach this office on or before **10th June, 1980** in the prescribed form available from the Registrar's office on pre-payment of Rs. 4/- (Rs. 3/- extra in case required by post) for the undermentioned posts :—

(1) Registrar—1 (Rs. 1400-50-1650-60-1830-70-1900)

Essential Qualifications:

(i) At least a second class Post-graduate degree and (ii) at least ten years administrative experience in a position involving supervision, control and planning or at least ten years of teaching at the University level with adequate knowledge and experience of educational research, planning and administration.

Desirable Qualifications:

(i) Familiarity with the life and working of a University or with the educational administration in a College/University or an institute of higher learning or research, (ii) Experience of teaching in a college or a University and (iii) A degree or a Diploma in Management.

Note:

Persons already working in the University on the post of the Dy. Registrar or on an equivalent administrative post and possessing at least a Bachelor's degree could be considered for the post provided that such persons possess a minimum of 10 years experience as Deputy Registrar or on an equivalent post.

(2) Controller of Examinations: (Rs. 1250-50-1700).

Essential Qualifications:

(i) At least a second class Post-graduate degree and (ii) At least 10 years experience of conducting University examinations and other allied work at the executive level and having record justifying entrusting of confi-

dential work or at least 10 years administrative experience in a position involving supervision, control and planning.

Desirable:

Experience of University administration and familiarity with the working of University Bodies and Institutions.

Note:

Persons already working in the University and who do not possess Post-graduate degree but are graduates, be considered for the post provided that such persons possess a minimum total administrative experience of 10 years of working as Dy. Registrar and or Asstt. Registrar.

(3) Public Relation Officer—1 (Rs. 750-30-1020-40-1300-50-1350.).

Essential Qualifications:

(i) At least a second class post-graduate degree, (ii) At least a second class Bachelor's degree or Diploma in Journalism from a recognised University/National Institute, and (iii) Good experience of drafting in Hindi and English.

Desirable qualifications:

At least two years practical experience of working in a Newspaper of National/State Level standard or of working in Central/State Public Relations Office as Journalist, sub-Editor, Reporter or Assistant Public Relation Officer.

Note:

Persons already working in the University on the post of Section Officer or an equivalent post and who do not possess post-graduate degree but who are graduates could be considered provided that such persons possess at least three years experience of administration in a position involving supervision, control and planning, and

also possess 5 years practical experience in a newspaper of National/State level standard or of working in Central/State Public Relations Office as Journalist, sub-Editor, Reporter or Assistant Public Relation Officer."

(4) Receptionist: (Rs. 620-20-760-25-1010-30-1100)

Qualifications: A graduate of a recognised University. Command over spoken Hindi and English. Familiarity with the working of a University or an institution of higher learning. Experience as a Receptionist will be preferred. Pleasing personality will be deemed to be an additional qualification.

Persons who had already applied in response to earlier advertisement No. 10/79 for the post of Registrar and No. 10/78 and 10/79 for the post of Controller of Examinations need not apply again. They should intimate to the University that they are still desirous to be considered for the post applied for on the basis of their earlier applications sent in response to the aforesaid advertisements. They may also send the particulars of their additional qualifications and experience etc. acquired since then by them on plain paper.

The University reserves the right to alter the number of posts in any cadre. Benefit of Provident Fund and other allowances will be admissible as per rules of the University. Candidates desiring to apply for more than one post must send their applications separately for each post. Candidates will be called for interview at their own expense. Retired persons need not apply.

**V.D. Qamra
REGISTRAR**

UNIVERSITY OF BOMBAY BOMBAY

Applications are invited in the prescribed form for the following posts in the University :

Posts	Centre
1. Two Readers 2. Two Lecturers 3. One Lecturer in Swahili	} Centre of East African Studies (Area Studies Programme)
4. Two Readers 5. Two Lecturers 6. One Lecturer in Russian Language	
	} Centre of Soviet Studies (Area Studies Programme)

The pay-scales of the posts are :
**Reader—Rs. 1200-50-1300-60-1900 and
Lecturer—Rs. 700-40-1100-50-1600.**

In addition to pay, Dearness Allowance, House Rent Allowance and Compensatory Local Allowance will be paid according to the University rules. All posts carry the benefits of Provident Fund and Gratuity according to the University rules. A higher starting pay may be given to persons appointed to the posts of Reader in special cases. The appointments to the posts will be on probation for two years but the probationary period may be reduced

by the Executive Council in special cases. Other things being equal, preference will be given to candidates from backward classes. The posts of Lecturer are reserved for candidates belonging to scheduled castes and scheduled tribes and will be filled up by appointment of such persons only as shall satisfy the requirements regarding qualifications, experience etc. laid down for the posts; provided, however, that if no candidate is available from scheduled castes and scheduled tribes, the posts will be filled up by appointment of duly qualified

persons from among the other candidates.

The minimum qualifications prescribed for the posts are as under :—

Reader:

Good academic record with a Doctor's degree or equivalent published work. Evidence of being actively engaged in (i) research or (ii) innovation in teaching methods or (iii) production of teaching materials.

About five years' experience of teaching and/or research provided that at least three of these years were as Lecturer or in an equivalent position. This condition may be relaxed in the case of candidates with outstanding research work.

Lecturer:

(a) A Doctor's degree or research work of an equally high standard; and

(b) Consistently good academic record with 1st or high 2nd class (B in the seven point scale) Master's degree in a relevant subject or an equivalent degree of a foreign University.

Having regard to the need for developing inter-disciplinary programmes, the degrees in (a) and (b) above may be in relevant subjects.

The Executive Council may relax any of the qualifications prescribed in (b) above provided that the selection committee is of the view that the research work of a candidate as evident either from his thesis or from his published work is of very high standard.

If a candidate possessing a Doctor's degree or equivalent research work is not available or is not considered suitable, the Executive Council may appoint a person possessing a consistently good academic record (weightage being given to M. Phil. or equivalent degree or research work of quality) provided he has done research work for at least two years or has practical experience in a research laboratory/organisation on the condition that he will have to obtain a Doctor's degree or give evidence of research work of equivalent high standard within five years of his appointment, failing which, he will not be able to earn future increments until he fulfils these requirements.

Explanation:

(1) For determining consistently good academic record, a candidate should either have an average of 55% marks at the two examinations prior to Master's degree (irrespective of the marks obtained in any of the two examinations) or 50% marks at each of the two examinations separately.

(2) For determining high second class, the mid-point between the minimum percentages of marks fixed by a University for award of second class and first class may be taken.

The additional qualifications prescribed for the posts at serial numbers 1 to 5 mentioned above are as under:

1. **Two Readers (African Studies)**—Preferably with specialization in Political Science/Sociology/History. Teaching/Research experience in African Studies.

2. **Two Lecturer (African Studies)**—Teaching/Research experience in African Studies.

3. **One Lecturer in Swahili (African Studies)**—Diploma in Swahili Language and Literature essential.

4. **Two Readers (Soviet Studies)**—Preferably with specialization in Political Science/Sociology/History. Teaching/Research experience in Soviet Studies.

5. **Two Lecturers (Soviet Studies)**—Preferably with specialization in Political Science/Sociology/History/Economics. Teaching/Research experience in Soviet Studies.

Eight copies of the application, in the prescribed form, should be sent in an envelope superscribed with "Application for the post of _____" so as to reach the Registrar (Teaching Appointments Unit), University of Bombay, Bombay-400 032, on or before Monday, 9th June, 1980. Candidates from abroad, Andaman and Nicobar Islands and Lakshadweep may send their applications so as to reach the Registrar on or before Monday, 23rd June, 1980.

Applications received after the last date will not be considered. Prescribed forms of application can be had in person, free of charge, from the Teaching Appointments Unit Registrar's Office, (Room No. 110), University of Bombay, Fort, Bombay-400 032.

Requests for supply of a set of eight prescribed forms by post should be made sufficiently in advance with a self-addressed stamped (Rs. 1.80) envelope of the size of 27 x 12 cms.

Candidates should send with every application a crossed Indian Postal Order or a crossed Demand Draft on a scheduled bank for Rs. 10/- drawn in favour of the Registrar, University of Bombay, payable at Bombay, as application fee. Candidates who apply for more than one post should send separate applications along with the requisite fee by means of a crossed Indian Postal Order/Demand Draft. Money orders or cheques or cash will not be accepted by the University. The fee will not be refunded once an application has been received by the University.

Incomplete applications and applications without the requisite fee will not be considered. Applications on plain paper will not be considered.

Candidates are advised to satisfy themselves before applying that they possess the prescribed qualifications and it is for the candidates themselves to ensure that they possess the prescribed qualifications. No inquiry asking for advice as to eligibility will be entertained.

Candidates called for interview will have to present themselves at their own expenses.

Canvassing, direct or indirect, will be a disqualification.

Note:—Persons who had applied for the above mentioned posts in response to the advertisement dated 21st December, 1978 need not apply afresh. However, if they have any additional information to supply, the same should be supplied in eight copies.

G.M. Rajarshi
REGISTRAR

HARYANA AGRICULTURAL UNIVERSITY

Advertisement No. 3/80

Applications invited for following posts. Higher start outstanding qualifications, experience and achievements. Benefits of Contributory Provident Fund and leave etc. according to University Rules. Applications of the candidates already in service must reach through proper channel upto the fixed date. Applications on prescribed form (obtainable free by sending self-addressed unstamped envelope size 23x10 cms. to Assistant Registrar (R), HAU, Hissar) accompanied by prescribed fee of Rs 10 - in the form of Crossed Postal Order in the name of Assistant Registrar (R), HAU, Hissar payable at HAU Hissar Post Office should reach Registrar by 31-5-1980. The applicants must possess prescribed qualifications and experience on the last date of receipt of applications. The Envelope containing application must be superscribed as 'APPLICATION FORM FOR THE POST OF.....'

1. **Professor of Agril. Business Management—(One):** (i) Second class Bachelor's degree. (ii) Second class Master's degree in Business Management or equivalent Post-graduate Training. (iii) Ph.D. in Business Management with special reference to agriculture or animal sciences. (iv) Ten years experience of teaching/research/actual work in Business Management in relation to Agril. development out of which at least 5 years should be as Associate Professor or of equivalent rank.

2. **Senior Seed Technologist—(One):** Essential : (i) Second Class B. Sc. (Agri-)/B. Sc. (ii) Second class M.Sc. (Agri-)/M.Sc. in Plant Breeding/Genetics/Seed Technology. (iii) Ph.D. in Plant Breeding/Genetics/Seed Technology. (iv) Ten years' experience of research/teaching extension in Plant Breeding/Genetics/Seed Technology as evidenced by published work and out of which 5 years should be as Associate Professor or in equivalent rank.

Desirable:

(i) Advanced training in Seed Technology Research (ii) Capability to organise Breeder's Seed Production and the Seed Technology Research.

3. **Associate Professor of Statistics: (One):**

(i) Second class Bachelor's degree with Maths./Stat./B.Sc. (Ag.). (ii) Second class M.A./M.Sc. in Statistics or Mathematics. (iii) Ph.D. with specialization in any branch of Statistics. (iv) At least five years teaching/research experience in Statistics, with special reference to designing of experiments in Agriculture or Animal Husbandry, with evidence of having conducted independent research and published its results in journals of repute.

4. **Associate Professor (Livestock Production & Management)—(One):**

Essential:

(i) Second class B.V.Sc. & A.H./B.Sc. (An. Scs.)/B.Sc. (Agri.)/B.Sc. (Dairying). (ii) Second class M.Sc. in any branch of Animal Sciences. (iii) Ph.D. in any branch of Animal Sciences. (iv) Five years experience in teaching/research/extension preferably in Livestock Production & Management.

Desirable:

Experience in management of large Dairy Herd Establishments.

5. Associate Professor (Vegetable Crops)—(One):**Essential:**

(i) Second class B.Sc. (Ag.). (ii) Second class M.Sc. Olericulture/Horticulture with specialization in Vegetable Crops. (iii) Ph.D. in one of the subjects as at (ii) above. (iv) Five years experience of teaching/research/extension in Vegetable Crops and food preservation.

Desirable:

(i) Adequate experience in establishing and maintaining vegetable farms and seed production of vegetable crops. (ii) Ability to impart training in Hindi.

6. Senior Medical Officer—(One):**Essential:**

(i) M.B.B.S. or equivalent (ii) House Surgeon experience of one year. (iii) Post-graduation in Medicine or Surgery. (iv) At least 7 years experience.

Desirable: Experience in administrative capacity.

7. Assistant Professor (Fruit & Vegetable Preservation)—(One):**Essential:**

(i) Second class B.Sc. (Ag.)/B.Sc. (Food Technology)/B.Sc. (Home Science). (ii) Second class M.Sc. in Hort./Veg./Food Tech./Home Sc. (Foods & Nutrition with specialisation in Fruit and Vegetable Preservation. (iii) Ph.D. in any of the subjects as at (ii) above. OR 3 years experience of teaching/research/extension in fruit and vegetable preservation.

Desirable:

Capacity to organise preservation trainings in rural areas.

8. Assistant Research Officer (Vety. Physiology)—(One):**Essential:**

(i) Second class B.V.Sc./B.Sc. (Agri.)/B.Sc. Animal Science/B.Sc. (ii) Second class M.Sc./M.V.Sc. in Physiology/Animal Biochemistry. (iii) Ph.D. in Physiology/Animal Biochemistry OR Second class M.Sc./M.V.Sc. in Physiology/Animal Biochemistry with three years experience in teaching/research/extension in Physiology preferably on the feed intake in animals.

Desirable:

Acquaintance with the techniques assay of metabolites, VFA and Steroids.

9. Junior Scientist (Animal Nutrition Department)—(One):**Essential:**

(i) Second class B.Sc. (Animal Sciences)/B.V.Sc. & A.H./B.Sc. (Dairying)/B.Sc. (Agri.). (ii) Second class M.Sc. in Animal Nutrition/Biochemistry.

mistry. (iii) Three years experience in Animal Nutrition research/teaching OR Ph.D. in Animal Nutrition/Biochemistry.

10. Assistant Professor of Genetics—(One):**Essential:**

(i) Second class B.Sc. (Agri.) or B.V.Sc. or B.Sc. (ii) Second class M.Sc. in Genetics. (iii) Three years experience of teaching and/or research in Genetics OR Ph.D. in Genetics.

11. Assistant Professor (A.I.)—(One):

(i) Second class B.V.Sc. & A.H./B.Sc. (An. Scs.)/B.Sc. (Ag.) with A.H. specialization/B.Sc. (Dairy Husbandry). (ii) second class Master's degree in Animal Physiology or equivalent with specialization in A.I. or Reproduction and three years experience in teaching/research/extension in Animal Physiology OR Ph.D. in Animal Physiology with specialization in A.I. or Reproduction.

12. Assistant Statistician—(One):**Essential:**

(i) Second class B.Sc. (Agr.) OR B.A./B.Sc. (Mathematics). (ii) Second class Master's degree in Statistics or Mathematics with Statistics as a special subject followed by training in Agricultural Statistics from a recognised Institution. (iii) At least three years practical experience of handling statistical investigations and/or designing of field experiments, tabulation and presentation of statistical data or Ph.D. in Statistics.

(Note: Persons who do not possess the above qualifications may be considered in the lower scale of Rs. 600-30-750-40-950).

13. Assistant Soil Chemist—(One):

(i) Second class B.Sc. (Ag.)/B.Sc. (ii) Second class M.Sc. (Ag.) in Soil Science with three years experience in Teaching/Research/Extension in Soil Chemistry/Soil Fertility OR Ph.D. in Soil Fertility/Soil Chemistry.

14. Assistant Breeder (Oilseeds)—(One):

(i) Second class B.Sc. (Ag.)/B.Sc. (ii) Second class M.Sc./M.Sc. (Ag.) in Plant Breeding/Genetics/Agri. Botany with three years experience of teaching/research/extension in Plant Breeding preferably in Oilseeds like groundnut and Sesamum OR Ph.D. in Plant Breeding/Genetics/Agri. Botany preferably on Oilseeds.

15. Coaches (One each in Athletics, Hockey and Wrestling):**Essential:**

(i) Bachelor's degree with at least 1 year course leading to diploma in Physical Education. (ii) N.S./N.I.S. diploma in concerned sport. (iii) M.P.E. regular course/M.P.E. (Summer course) M.E. Ed. (1-Year course)/M.A. in Physical Education (2-year course)/M.P.Ed. (2-year course). (iv) At least 3 years coaching/teaching experience in a College/University. (v) Participation in Inter-University/State/National/International level in concerned sport.

Desirable:

(i) Qualified official in the concerned sport. (ii) Publication of Books/

Articles in Journals. (iii) Coaching Inter-Varsity/State/National/International teams.

NOTE:

- For posts at Sr. Nos. 1 to 5 and 7 to 15, one or more qualifications relaxable in case of candidates found otherwise outstanding.
- Special weightage will be given to extension experience possessed by the candidates, for posts in disciplines amendable to extension.
- For posts at Sr. Nos. 7 to 14, the persons who do not possess Ph.D. at the time of their selection, if selected, will have to obtain Ph.D. degree within a period of five years failing which their future increments may be stopped.
- For post at Sr. No. 8, requirement of experience is relaxable if persons with requisite experience are not available.
- No. of posts mentioned against each post is likely to vary.
- 20% and 5% vacancies of Assistant Professors and equivalent are reserved for Scheduled Castes and Backward Classes candidates respectively, if suitable candidates from these categories are available.

PAY SCALES:

Post of 1 & 2 1500-60-1800-100-2000-125/2-2500.

3 to 5—1200-50-1300-60-1900.

6—1100-50-1600+N.P.A. and other allowances as admissible and rent-free accommodation.

7 to 14—700-40-1100-50-1600.

15—700-40-1100-50-1300.

Total emoluments at the initial of the pay scale (exclusive of House rent)

For Post of 1 & 2—Rs. 1930/-

3 to 5—Rs. 1585/-

6—Rs. 1485/-+N.P.A.

7 to 14—Rs. 1019/-

15—Rs. 1019/-

REGISTRAR

INDIAN INSTITUTE OF TECHNOLOGY

KANPUR

Addendum to Advertisement No. 4/80.

The last date for receipt of applications, in the prescribed form obtainable free of charge from the Registrar of the Institute by sending a self addressed unstamped envelope of 25 cm x 10 cm size, for the posts of Professors, Assistant Professors and Lecturers in the Department of Mechanical Engineering of the Institute, issued vide Advertisement No. 4/80, has been extended up to May 31, 1980.

UNIVERSITY OF RAJASTHAN JAIPUR

CORRIGENDUM

The post of Professor of Chemistry advertised under Advertisement No. 9/80 is the post of Professor of Physical Chemistry.

V.D. Qamra
REGISTRAR

UNIVERSITY OF HYDERABAD HYDERABAD

Advertisement No. Estt. 1/80

Applications on the prescribed form are invited for the posts of Professors, Readers and Lecturers as detailed below for various Schools/Departments in the University.

SCALES OF PAY

1. Professor: Rs. 1500-60-1800-100-2000-125/2-2500.
2. Reader: Rs. 1200-50-1300-60-1900.
3. Lecturer: Rs. 700-40-1000-50-1600.

Approximate emoluments at the minimum of the scales for Professor: Rs. 2,377/-; Reader: Rs. 2,030/- and Lecturer: Rs. 1,328/-

Qualifications and Experience

Professor: A first or high second class Master's degree in the subject concerned and consistently good academic career; a Doctorate Degree and considerable published work of high standard; Ten years' Post-graduate teaching experience and experience of guiding research work.

Reader: A first or high second class Masters' Degree in the subject concerned; A Doctorate Degree and published work of high standard; 5 year's experience of teaching in Honours/Post-graduate classes or post-doctoral research.

Lecturer: (i) A Doctorate Degree or research work of equally high standard and (ii) consistently good academic record with first or high second class (B in the 7-point scale) Master's degree in the relevant subject or an equivalent degree of a foreign University.

The Selection Committee may recommend relaxation of any of the qualifications at (i) and (ii) above subject to certain conditions provided a candidate has done research work for at least two years or has practical experience in a research laboratory/organisation or has published work of high standard.

Details of Posts, Broad Areas of Research and Specialisation

1. SCHOOL OF PHYSICS

Professors (2) and Readers (4) in Theoretical Physics: Quantum Optics, Non-Linear Optics, Statistical Physics, Plasma Physics, Solid State Physics.

Experimental Physics: Low temperature Solid State Physics, Material Science—Preparation and characterization of materials, Solid State electronics, Laser Physics, Surface Physics.

Lecturer (1) in Experimental Physics.

2. SCHOOL OF CHEMISTRY

Lecturer (1) in Physical/Inorganic/Organic/Theoretical Chemistry.

3. SCHOOL OF HUMANITIES

Department of Philosophy

Professor (1) and Lecturer (1) in Classical Philosophy/Philosophy of Natural and Exact Sciences/Philosophy of Social Sciences/Analytical Philosophy.

4. SCHOOL OF SOCIAL SCIENCES

(A) Department of History

Lecturer (1) in Medieval Indian History.

(B) Department of Sociology & Anthropology

Professor (1) in Sociology/Social and Cultural Anthropology.

NOTE: The number of posts indicated above is only tentative and is likely to vary depending upon the positions available at the time of selection.

GENERAL

For the posts of Lecturers, preference will be given to Scheduled Caste and Scheduled Tribe candidates who are considered fit.

In addition to pay, the posts carry allowances as per University rules which at present are equivalent to those admissible to Central Government employees stationed in Hyderabad. Retirement benefits as per University rules.

Prescribed application forms are available from the Assistant Registrar (Administration) on request accompanied by a self-addressed stamped (60 paise) envelope. Applications with the requisite fee of Rs. 7-50 (non-refundable) in the form of crossed Postal Order drawn in favour of the Finance Officer and other documents/certificates/publications should reach the Registrar, University of Hyderabad, Central University P.O., Hyderabad 500 134 on or before 7th June, 1980.

Candidates called for interview from out-stations will be paid contribution equivalent to return single second class railway fare towards their journey expenses. Candidates already in service should submit their applications through proper channel. Applications received after the last date or without the complete information or without the requisite fee may not be entertained.

It will be open to the University to consider the names of suitable candidates who may not have applied. Relaxation of any of the qualifications, experience, etc. may be made in exceptional cases in respect of all posts on the recommendations of the Selection Committee. Canvassing in any form for or on behalf of any candidate will disqualify such candidate.

P.V. George
REGISTRAR

**It pays to
Advertise
in
University
News**

Campus News Contd.

Bihar Ordinances

The Bihar Government has promulgated ordinances setting out codes of conduct for the teaching and non-teaching staff of universities and appointing senior IAS officers as Vice-Chancellors of five of the seven universities in the State. The measure has been taken to tone up administration in these universities and restore academic order on the campus. The ordinances have banned participation of the teachers and the non-teaching staff in agitations. The teachers have also been barred from writing guide-books and indulging in private tuition.

UGC clears Trichy and Coimbatore University

Prof. Satish Chandra, Chairman, University Grants Commission said in Madras that the Commission has been keen on developing adult education and extension work through universities and colleges. Referring to the proposed universities at Coimbatore and Tiruchirapalli, Prof. Chandra said that the UGC had cleared them and they would become eligible for central assistance when certain conditions imposed by the Commission had been fulfilled.

Academics to study UP politics

In Uttar Pradesh, academics from fifteen universities have formed a State Political Science Association. Mr A.F. Usmani, Reader in the Aligarh Muslim University said that the Association will make an indepth studies of the State's socio-political economic problems at the grassroot level. The office bearers of the Association are : Mr S.A.H. Hazzi, President (from AMU); Mr I.N. Tewari, Secretary; Mrs Vimla Puri, Vice-President (from Meerut University); and Dr J.N. Lal, Vice-President (from Avadh University).

SRI VENKATESWARA UNIVERSITY

Advertisement No. EII-2/1980(1), dated 3-5-1980.

Applications are invited in the prescribed form for the following posts in the University Service on or before 2-6-1980.

S. No.	Post & Department	No. of Posts	Specialisation
I. S.V.U. COLLEGE OF ARTS & SCIENCES: TIRUPATI			
1.	Readers in Botany	Two (1 Ty)	Plant Virology (Permanent Post)
2.	Lecturer in Biochemistry	One (Ty)	
3.	Readers in Chemistry	Two (1 Ty)	Agricultural Geography
4.	Lecturer in Chemistry	One	
5.	Reader in Geography	One	
6.	Reader in Geology	One	
7.	Readers in Home Science	Two	1. Nutrition and Foods 2. Home Science Extension Education
8.	Reader in Physics	One	Personnel Management and Industrial relations/Banking/Financial Management/ Cost Accountancy/Taxation Language & Literature
9.	Reader in Zoology	One (Ty)	
10.	Lecturer in Zoology	One (Ty)	
11.	Professor in Commerce	One)	
12.	Reader in Commerce	One)	Pali/Prakrit
13.	Lecturer in French (Area Studies Programme—Dept. of History)	One)	
14.	Lecturer in Hindi	One (Ty)	
15.	Reader in Law	One	
16.	Reader in Philosophy	One	
17.	Professor in Population Studies	One	
18.	Lecturer in Sanskrit	One	
19.	Professor in Sociology	One	
20.	Professor in Tamil	One (Ty)	
21.	Lecturer in Tamil	One	
II. S.V.U. COLLEGE OF ENGINEERING: TIRUPATI			
22.	Professor in Civil Engineering	One	Electrical Machines/Power Systems/ Control Systems.
23.	Lecturer in Civil Engineering	(One (Ty)	
24.	Lecturers in Mechanical Engineering	Three (2 Ty)	
25.	Reader in Electrical Engineering	One (Ty)	
26.	Lecturer in Electrical Engineering	One (Ty)	Electrical Machines/ Power Electronics/ Control Systems.
27.	Lecturer in Electronics & Communications Engg.	One	
28.	Lecturer in Humanities	One	Digital Communications/Microwave communications/Communication Engg./ Communication systems/Space Communications.
III. S.V.U. POST GRADUATE EXTENSION CENTRE, CUDDAPAH			
29.	Lecturer in Chemistry	One	Industrial Psychology.
30.	Lecturer in Geology (Applied)	One	Inorganic Chemistry/Physical Chemistry/ Organic Chemistry/Analytical Chemistry/ Mining Geology/Mineral exploration/ Hydrogeology/Geochemistry/ Engineering Geology.
31.	Reader in Public Administration	One	Personnel Management
32.	Reader in Commerce	One	Advanced Accounts/Cost Accountancy/ Financial Management/Management Accounting.
IV. S.V.U. POST GRADUATE EXTENSION CENTRE: KAVALI.			
33.	Lecturer in Physics	One	Acoustics /Electronics/Bio-Physics/Mathematical Physics.
34.	Lecturer in Zoology	One	Neurobiology/Marine Zoology.
V. S.V.U. POST GRADUATE EXTENSION CENTRE : KURNOOL			
35.	Lecturer in Chemistry	One	Organic/Inorganic Chemistry
36.	Lecturer in Physics	One	Electronics/Solid State Physics/Mathematical Physics/Spectroscopy.
37.	Reader in Statistics	One	Operations Research and Statistical Quality Control.
38.	Professor in Telugu (Sanjeevaiah Centre for Telugu Studies).	One	

Scale of Pay :

1. Professor : Rs. 1500-60-1800-100-2000-125/2-2500.
2. Reader : Rs. 1200-50-1300-60-1900.
3. Lecturer : Rs. 700-40-1100-50-1600.

All the above posts carry D.A. etc., at the University rates. There will be reservation for S.C./S.T./B.C. candidates for "Lecturers" posts according to U.G.C./State Government guidelines.

The prescribed application form and other particulars can be had from the Registrar, Sri Venkateswara University, Tirupati-517502, Andhra Pradesh, on payment of Rs. 5/- either by Andhra Bank Chalan or State Bank of India Chalan Crossed *Indian Postal Orders of the said value drawn in favour of the Registrar, Sri Venkateswara University, Tirupati or 517502, Andhra Pradesh (*Payable at the S.V.U. Campus Post Office, Tirupati).

The University reserves to itself the right to increase or decrease the number of posts, to fill or not to fill any or all of the above posts, and to relax the qualifications when candidates with prescribed qualifications are not available or not found suitable and to consider and appoint persons who may not have applied.

Candidates called for interview have to attend at their own expenses.

REGISTRAR

INDIAN INSTITUTE OF TECHNOLOGY

KANPUR

Advertisement No. 16/80

Applications are invited for the following posts in the Institute in the pay scales noted against each :

Professor : Rs. 1500-60-1800-100-2000-125/2-2500.

Assistant Professor : Rs. 1200-50-1300-60-1900.

Lecturer : Rs. 700-40-1100-50-1600.

The Departments of Chemical Engineering and Electrical Engineering are seeking individuals to fill up the teaching positions with ability and aptitude for teaching in undergraduate/postgraduate programmes, research and development in any of the areas of specialisations listed under each. However, applications from outstanding candidates in other areas in the Departments may also be considered. The number of positions available in each of the departments are also indicated below:

Department of Chemical Engineering:
(Professor, Assistant Professor and Lecturer)

1. Process dynamics/control, simulation, optimization and process engineering.
2. Chemical reaction engineering, chemical thermodynamics and transport phenomena.
3. Energetics, environmental pollution and control, petroleum processing, petro-chemicals, coal gasification and polymers, and biomedical engineering.

Number of Positions—10 (Ten)

The Department has an energetic and young faculty, and active post-graduate programme. The department is actively involved in sponsored research and development projects funded by Governmental agencies and industry. There are well equipped laboratories in the department.

Department of Electrical Engineering:
(Professor, Assistant Professor and Lecturer)

Digital and Linear Circuit design, Device modelling, Bioelectronics, Computer-aided design, Instrumentation and transducers, Computer architecture, Microprocessor applications; Real time computer control; control theory, Numerical/Process control High voltage engineering, Power electronics and industrial drives.

Number of Positions—15 (Fifteen)

The Department has presently 34 faculty members and an active post-graduate programme with about 40 Ph.D. students and 100 M. Tech. students in addition to its heavily subscribed undergraduate programme. The Department is actively involved in sponsored research and development projects funded by Governmental agencies and by industry.

Qualifications and experience for various positions:

Professor:

Doctorate degree with excellent academic record and atleast eight years

of professional experience of good quality outside the work for degree.

OR

M. Tech. with excellent academic record and atleast fifteen years of industrial experience with brilliant record outside the work for the degree.

The candidates must have demonstrated ability in teaching and independence in research evidenced by significant contributions by way of publications of good quality in journals of repute or developmental projects work of merit in any one of the aforesaid areas of specialisation.

Assistant Professor:

Doctorate degree with excellent academic record and atleast three years of professional experience outside the work for the degree. OR

M. Tech. with excellent academic record and atleast seven years of industrial experience outside the work for the degree. The candidates must have demonstrated ability in teaching and independent research work as evidenced by adequate number of research publications of good quality in journals of repute or developmental work of merit in any one of the aforesaid areas of specialisations.

Lecturer:

Doctorate degree with excellent record and atleast three years of teaching research/industrial experience with good record outside the work done for the degree;

The candidate must have ability for good teaching and independent research evidenced by adequate publications or developmental work in any one of the aforesaid areas of specialisations. For all these positions basic degree in respective branch of engineering is required.

The Institute has well equipped laboratories and also Biosystems Laboratory, Laser Laboratory, besides central facilities. There is a well established Computer Centre having DEC 10, IBM 1800, PDP-1 Systems with interactive graphic terminals and TDC-316, and a group of experienced programmers. The Institute has a well stocked library with more than 2,17,000 volumes and 1800 periodicals. The Central facilities included 2 MeV Van de Graaff accelerator, 4096 multi-channel analyser and other radiation detection equipment, liquid nitrogen and spectrometers, glass blowing shop, crystal growth facility, central instrumentation laboratory, precision machine shop, electron microscope besides a large workshop for fabrication of specialised research apparatus.

There is an Advanced Centre for Electronic Systems in the Institute attached to the Department of Electrical Engineering. The Centre carries out unclassified research and development work in the areas such as Communication, Radar, Signal and Image processing and instrumentation systems sponsored by Governmental agencies and industry. Besides, an Advanced Centre for Materials Science has been established recently at the

Institute by the Government of India to undertake research in the frontiers of development on materials of national importance.

The Campus facilities include a Primary and Higher Secondary School, a Health Centre and a Shopping Centre.

The posts are permanent and carry retirement benefits in the shape of CPF Scheme or GPF-cum-Gratuity Scheme or GPF-cum-Pension-cum-Gratuity Scheme, as may be opted according to rules. The age of retirement is 60 years. During the first year, the appointment will be on probation. Besides pay, posts carry allowances according to the Institute rules, which at present correspond to those admissible to the Central Government employees stationed at Kanpur. Higher initial pay is admissible to exceptionally qualified and deserving candidates. Candidates called for interview will be paid second class railway fare from the place of duty to Kanpur and back by the shortest route.

In the category of Lecturer one post in each Department will be reserved for SC/ST candidate. In the event of non-availability of suitable SC/ST candidate, the reserved posts would be treated as dereserved.

Applications from within India must be made on prescribed form obtainable free of charge from the Registrar of the Institute by sending a self-addressed unstamped envelope of 25 cm. x 10 cm size. Application should be accompanied by a postal order for Rs. 7.50 (Rs. 1.87 for SC/ST candidates).

Applicants who are employed in a Government/Semi-Government organisation or Institutions should send their applications through proper channel, else they will be required to produce a 'No Objection' certificate from their employers at the time of interview.

Applicants from abroad may apply on plain paper enclosing a complete biodata and names of three referees from whom reference letters may be obtained.

Applications should reach the Registrar, Indian Institute of Technology, IIT Post Office, Kanpur-208016, U.P. (India) on or before June 16, 1980.

UTKAL UNIVERSITY CORRIGENDUM

Corrigendum to Advertisement No. Estt. 1/926-C./8054/80 dated 21-4-80.

This is for information of all concerned that the last paragraph of the relevant advertisement in question published earlier relating to the leave salary and pension Contribution in respect of candidates in Govt. Service is modified and shall be read as under :—

"In case of candidates appointed from Govt. Service, the University will bear the Leave Salary and Pension contributions for a period of two years only."

University Office,
Vani Vihar, Bhubaneswar-4,

REGISTRAR